TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 9.] 1917. [No. 2.

UNCLASSED FEVERS OF TROPICS AND DENGUE.

de MELLO (F.), BORCAR (A.) & de SOUSA (L.). **Contribution à l'étude des fièvres remittentes de l'Inde Portugaise.**—*Anais Scientificos da Faculdade de Medicina do Pôrto.* 1916. Vol. 3. 41 pp.

The authors in Part 1 of this monograph give a history of the remittent fevers of Portuguese India and show that for a long time enteric fevers were considered to be absent. By systematic enquiry it was found that there were many fevers of long duration which were uninfluenced by quinine, were contagious and associated with intestinal haemorrhages, and evidently belonged to the typho-colon group. Further studies were carried out for the identification and isolation of the pathogenic agents, and in two instances the *B. Columbense* of CASTELLANI was found. Statistics of age incidence for evidence of immunity showed a large proportion of the cases to be in early adult life, and many diagrams of the curves obtained are given in part 2 for the years 1912–13, and 1914.

Part 3 gives the results of their serological studies. They found that the Widal reaction was most useful as a group test to differentiate enteric from other fevers, but of little value in separating the typhoids and paratyphoids. In unvaccinated persons they recognised three groups:—

(*a*) Plus reactions for typhoid with negative for paratyphoids.
(*b*) Plus reaction for typhoid and for paratyphoids.
(*c*) Plus reaction for typhoid and higher for paratyphoids.

The highest agglutination titre did not always indicate the infecting agent, early infections sometimes giving lasting and high immunity reactions. The clinical characters with charts of twelve cases are given. The remittent fevers of the country can be divided into three classes. (1) Fevers of classical type; (2) Fevers differing from the above but all showing nervous, pulmonary, and enteric symptoms; (3) Fevers of remittent character with no visceral complications. The two last groups, called "Climatic fevers," can be diagnosed by laboratory methods only and the authors come to the conclusion that most of these are infections by the typho-paratyphoid group of organisms.

P. W. Bassett-Smith.

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Stresino (Aurelio). **Un caso di "febbre bottonosa" a Bengasi.**—*Malaria e Malat. d. Paesi Caldi.* 1916. July–August. Vol. 7. No. 4. pp. 230–232. With 1 chart.

The author gives in detail a further case of "Macular fever" from Tunis, which was first described by Conor and Bruch in 1910 and later by Gabbi in 1912 [see this *Bulletin*, Vol. 2, p. 109, and Vol. 3, p. 330].

The pyrexia, which at the onset was severe, lasted eight days, the temperature falling by lysis, and the eruption appeared on the third day associated with intense headache and general muscular and articular pains. The eruption was papular and petechial in character, especially abundant over the radial articulation of the wrist, the palms of hands, the abdomen and feet. No relapse occurred and convalescence was rapid. A blood examination gave the red cells as 4,550,000 and white as 6,500 per cmm., the polynuclear cells being relatively low, 60 per cent. The diagnosis had to be made differentially from typhoid and dengue.

P. W. B-S.

McWalter (J. C.). **A Note on Salonika Fever.**—*Med. Press & Circ.* 1916. Aug. 9. Vol. 102. N.S., No. 4031. pp. 122–123.

The author, serving with the Mediterranean expeditionary force, draws attention to a severe fever prevalent at Salonika of indefinite duration and high mortality, in which prostration and delirium are very marked features. He describes the disease as a cross between malaria and enteric, aggravated by broncho-pneumonia. Malarial parasites are present in the blood and the Peyer's patches may be inflamed and even ulcerated, but the spleen is not markedly enlarged and there is no periodicity.

In post-mortems the evidence of enteric, malaria, and pneumonia are much less marked than the clinical symptoms had indicated; in some cases signs of chronic dysentery were present. Some of the most severe types of the fever have been diagnosed as sunstroke.

In discussing treatment the author lays great stress upon the unfavourable predisposing causes which are present—climate, depression and lack of vitamines. "Where patients have been living for ten or twelve months in a hot, dusty, insanitary environment on canned beef, canned mutton, canned soup, canned jam, dry biscuits, canned milk, canned rice and chlorinated water, and you take them to hospital where they get canned milk, frozen beef, frozen chickens, frozen rabbits and tinned fruits it is difficult for the blood to become charged with that fresh abounding vitality which would enable it to shake off a fever." Quinine was most useful but could not be called a specific.

[The malarial fevers which abound in the Salonika region are chiefly due to the malignant type of parasite and pernicious symptoms are common, simulating sunstroke, dysentery, etc.; the reviewer knows from personal experience that these cases are often very resistant to quinine and difficult to cure. It is therefore probable that the Salonika fever here described is generally due to a heavy infection of *Laverania malariae*, occasionally complicated with enteric.]

P. W. B.-S.

WEITZ. **Ueber zwei Fälle von Fünftagefieber.** [Two Cases of Five Day Fever].—*Med. Klinik.* 1916. June 18. Vol. 12. No. 25. p. 659.

Professor WERNER at a meeting of Health officers at Warsaw reported a peculiar illness which he called five-day fever. The attacks of pyrexia last for 24 to 48 hours and the interval between them is five to six days. Similar cases have occurred in areas remote from the eastern frontier and the author describes two; one at Hamburg and one in a field hospital in northern France. Case one was a ward maid aged 36; she had felt pain in the left elbow joint for four weeks and looked ill; she was admitted to hospital. The tongue was coated, there was tenderness over the lumbar vertebrae and especially over the external condyle of the right arm; nothing else abnormal was detected. There were five pyrexial attacks lasting 48 hours each, the intervals between them being five days; recovery was complete. The second case was a soldier who complained of abdominal pain, headache, and giddiness; he was sent into hospital from the trenches. There the symptoms were fever, tenderness of the spinal column and fibula, with pain over the epicondyle of the left arm. There were four attacks of pyrexia each lasting 48 hours with five-day intervals. Recovery was complete.

The similarity of the cases is very marked and the likeness to those described by WERNER definite. No cause could be traced but the condylar pain was probably due to circumscribed periostitis.

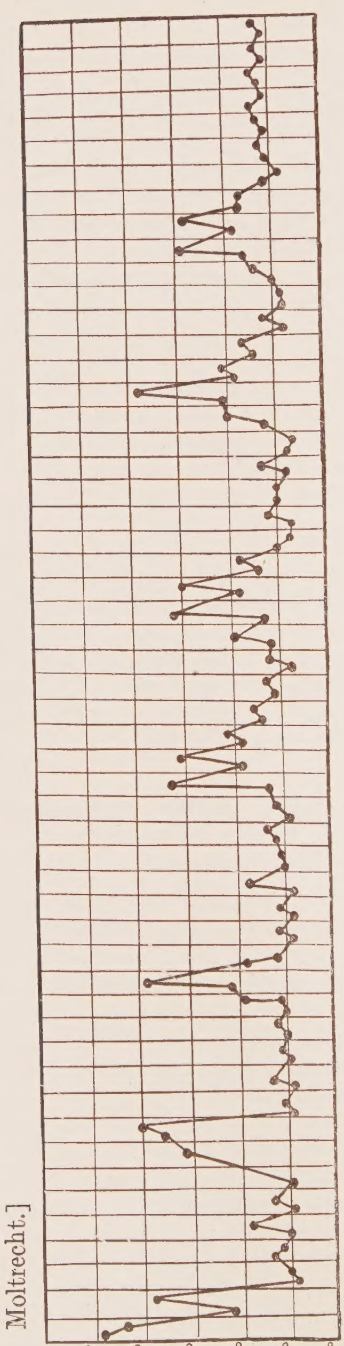
[Five-day fever is a most unsatisfactory term to distinguish this fever, the time element being useful for diagnosis but not good for nomenclature, and we now have "3-day fever," "5-day fever," "6-day fever," and "7-day fever," for phlebotomus fever and various types of dengue. Volhynia fever is preferable.]

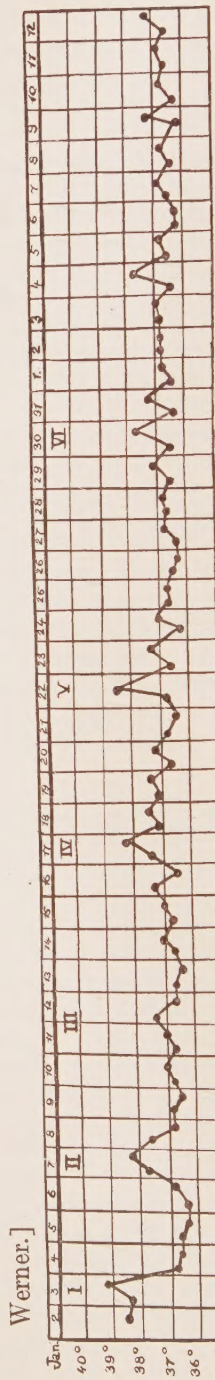
P. W. B-S.

WERNER (H.) & HAENSSLER (E.). **Ueber Fünftagefieber, febris quintana.**—*München. Med. Woch.* 1916. July 11. Vol. 63. No. 28. pp. 1020–1023. With 24 charts.

Werner, who originally reported cases of this fever, now describes in detail the course of the disease and illustrates this with a large number of temperature charts [see Chart] and reports of cases. It is noted that irregularities of the typical course are found and some cases have little or no fever but all the other associated symptoms; this the authors call the "equivalent" of an attack. The subjective complaints are pains in the muscles, chiefly of the lower extremity, and to a less degree in the bones, which, though worst during the febrile paroxysm, do not completely cease in the intervals and remain for weeks during convalescence. Headache is marked, often with eyeball pain. Objectively enlargement of the spleen is noticed, which the author states might be due to antityphoid inoculation. Blood examinations show no change in the red cells but there is generally a marked polymorphonuclear leucocytosis with the rise of temperature. An investigation into the etiology has not been very successful. Bacteriological examination of the blood gave in two cases a short bi-polar rod of doubtful importance, and in one case a drop of blood taken at the height of a paroxysm and stained with Giemsa showed a form of spirochaete whose length was about 10μ, but as no others were detected in hundreds of films examined, it cannot be taken as conclusive evidence.

FIVE DAY FEVER.





Attempts to inoculate mice, guinea-pigs and dogs were unsuccessful, and two subcutaneous injections of the blood into man gave no results. Later Werner was able to infect two men by intramuscular injections, the incubation periods being 20 and 24 days (details to be reported later). From its clinical characters the disease resembles a form of relapsing fever and is probably due to a spirochaete conveyed by lice.

MOLTRECHT. **Beiträge zur Kenntnis des Fünftagefiebers.** [Contribution to the Knowledge of Five Day Fever.]—*München. Med. Woch.* 1916. July 25. Vol. 63. No. 30. pp. 1097–1098. With 1 chart.

This disease, sometimes called Volhynia fever from the place where it was first observed, appears to be more common than was at first believed. It shows a marked periodicity, having usually a period of five days between the height of one paroxysm of fever and the next [see Chart], each attack lasting about 48 hours, associated with rheumatic pains, etc. The author has had the opportunity of seeing many cases and describes the symptoms fairly fully. He remarks upon the prolonged debility which follows a so relatively trifling disease. There are few physical signs, the most important being some enlargement and tenderness of the liver and spleen.

Blood examinations gave no clue to the cause. For treatment he found pyramidon gave the best results; quinine and aspirin were useless. He was not able to ascertain whether fleas or lice, from which the men are never completely or permanently free, acted as "carriers." Cases are sometimes reported as "Five-day fever without fever." This can only lead to confusion, and the author suggests that the term "Russian intermittent fever" would perhaps be better.

P. W. B-S.

STIEFER (G.) & LEHNDORFF (A.). **Ikwa Fieber.**—*Med. Klinik.* 1916. Aug. 20. Vol. 12. No. 34. pp. 898–900. With 7 charts.

The author reports 38 cases of recurring fever which developed on the Ikwa, a river of Volhynia. The course of all was very similar—sudden onset, high fever lasting 2–3 days, intense pains chiefly in shin bones, and relapses after 3–5 days, each relapse tending to get less severe. Among 30 cases 7 showed two relapses, 10 three, 6 four, 6 five, and one case seven. Splenic enlargement was generally noticed. The blood showed a slight leucocytosis and marked eosinophilia, 6–14 per cent. For treatment pyramidon was valuable. It was important etiologically that when the men were removed from the endemic area no fresh cases occurred, but fresh troops moved to the area quickly developed the disease. There was strong evidence against contact infection, but the facts point to conveyance of the virus by some insect, probably lice, as the disease occurs in the winter months.

[This disease is probably a form of that already described as Volhynia, or Russian relapsing fever.]

P. W. B-S.

PIAZZA (C.). **Un nuovo caso di Sodoku.** [Contribution to the Study of Rat-Bite Fever.] — *Morgagni.* 1916. Feb. 29. Vol. 58. pp. 67–80.

The author gives a resumé of knowledge of the disease as seen in China, Japan, Europe and America and details the chief characteristics which have been noted by different observers. He then describes a case of his own : that of a man, aged 48, a native of Verona, who was bitten by a rat on May 28th. The initial lesion, on the leg, was slight and soon healed but on the fourteenth day after, the wound became irritable, tumified and painful; secondly lymphatic inflammation followed, with fever, prostration, anorexia, and articular pains. He was admitted into hospital on June 17th. A small ulcer was then present at the site of the bite but there was no cutaneous eruption and very few subjective or objective signs. Blood examinations gave negative results during a nonfebrile period but during a paroxysm of the fever there was a slight leukocytosis and a marked eosinophilia (7 to 14 per cent.) He was treated with neosalvarsan, 30 and 60 cgm., and made a good recovery. The chief points were, the long period of incubation, the nonsuppurative character of the secondary inflammation, the lymphatic implication and the subsequent pronounced asthenia. A guinea-pig was inoculated with 3–4 cc. of the patient's blood but gave no definite results. No blood parasites were found.

Ova of ascarides were found in the faeces.

P. W. B-S.

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WOLBACH. (S. B.). **The Etiology of Rocky Mountain Spotted Fever. Occurrence of the Parasite in the Tick. (Second Preliminary Report.)**—*Jl. Med. Res.* 1916. Sept. Vol. 35. No. 1. pp. 147–150.

Boston Mass

In March 1916 the author reported the presence of peculiar parasitic bodies in monkeys and guinea-pigs infected with Rocky Mountain spotted fever [this *Bulletin*, Vol. 8, p. 284]. In the present paper he reports the presence and distribution of the parasite in experimentally infected ticks, *Dermacentor venustus* Banks. Each tick was allowed to feed for two to five days on the shaved skin of the infected guinea-pig. One half of the tick, with salivary gland, Malpighian tube, leg muscles, and part of intestinal diverticulum was examined in smear preparations stained by Giemsa, or by dark field illumination; the other part in embedded specimens. In infective ticks parasites was found similar to those previously observed in tissues of monkeys and guinea-pigs, but never in non-infective ticks. The parasites were present most abundantly in the striped muscle, but also in the Malpighian tubes, salivary glands and ducts, and brain ganglia. They were numerous in the muscle fibres of the uterus and vagina, and have been seen in the spermatozoa. Morphologically two types were observed. One, a lanceolate diplococcoid organism which stains fairly deeply with chromatin characteristics, the second a small rather slender rod shape form, poor in chromatin staining material, which may contain bipolar or more numerous granules. A third minute oval coccoid form was also observed staining blueish with Giemsa; these are often very abundant within the cells and are too compact to be resolved except at the periphery of the clumps. The lanceolate form is the only one

generally found in the circulating blood of infected animals and probably represents the most resistant stage. It is non-motile as seen by dark ground illumination. A more detailed report of the experimental work will shortly be published.

P. W. B-S.

Public Health Reports. 1916. Oct. 6. Vol. 13. No. 40. pp. 2753–2754.—**Rocky Mountain Spotted Fever in California.**

Dr. F. L. Kelly, Assistant Entomologist, of the California State Board of Health, reports 38 cases of Rocky Mountain Fever, 6 in Modoc County and 32 in Lassen County, with a mortality of one in the former and six in the latter, between 1903 and 1916. He gives the following conclusions :—

" (1) Rocky Mountain spotted fever has existed in California for a much longer period and to a far greater extent than has hitherto been supposed.

" (2) There are probably five main infected areas, one in Modoc County and four in Lassen.

" (3) The disease is not as severe in California as in Montana, nor as light as in Idaho.

" (4) The infection probably entered California through Nevada rather than Oregon."

P. W. B-S.

Newstead (R.). **On the Genus Phlebotomus. Part 3.**—*Bull. Entomol. Res.* 1916. Oct. Vol. 7. No. 2. pp. 191–192. With 1 text-fig.

The author gives a technical description of *P. major* var. *chinensis*, which he states differs in some of its characters from that of *P. major* Annandale, particularly in the superior claspers and the palpi of the male. The specimens of the species were obtained from the Western hills, Pekin and from Ting Chow twelve miles east of Pekin. Five female examples of a possibly new species were also obtained from the same localities.

P. W. B-S.

Langeron (M.). **Les Phlébotomes dans la région parisienne.**—*Bull. Soc. Path. Exot.* 1916. Oct. Vol. 9. No. 8. pp. 573–576.

The genus Phlebotomus is very widely distributed but it is found mostly in warm climates. Recent observations by Blanchard, Lesne, Aubert, Legendre and others have demonstrated its presence in the Alpes Maritimes, Côte d'Or, Northern Italy, Switzerland and the valley of the Somme. At Bourg-la-Reine, South of Paris, females of *P. papatasii* were seen and taken during the hot months by the author. The phlebotomus probably extend up the valley of the Rhone and the Saone from Lyon and Beaune, and pass up the valley of the Doubs. Doubtless it occurs in Alsace and the valley of the Rhine where the climate is mild. It is found also in the valley of the Seine and probably in the basin of the Loire and the west of France, regions separated from the former by high mountains.

P. W. B-S.

CLELAND (J. B.), BRADLEY (B.) & MCDONALD (W.). **On the Transmission of Australian Dengue by the Mosquito** *Stegomyia Fasciata.—Med. Jl. of Australia.* 1916. Sept. 2 & 9. Vol. 2 (3rd year). Nos. 10 & 11. pp. 179–184 & 200–205. With 4 charts.

In March 1916 an epidemic of dengue, which was present in Queensland, appeared in some of the northern coast towns of New South Wales and particularly at Murwillumbah. An investigation as to the aetiology and means of prevention was ordered by the Minister of Public Health. In an early report [see this *Bulletin*, Vol. 8, p. 280] the authors concluded that the disease was spread by the *Stegomyia fasciata*, but the experiments were unsatisfactory as they were conducted in the endemic locality.

In the present paper are detailed fresh experiments which are not open to this objection and were made with the greatest care and exactitude. Two series of mosquitoes, one of Stegomyia and one of Culex, were collected in the locality; these had become infected by feeding on acute cases on the first and second day of the disease, and were brought in separate boxes to Sydney and there allowed to feed upon non-immune persons in that town, where no dengue existed.

The first series of experiments was negative, the reason for which is promised in a future report. In the second series 100 Stegomyia and 112 *Culex fatigans* were collected at Mullumbimby, nine persons at Sydney volunteering for the experiments.

Several of the subjects were exposed to infection from the mosquitoes on more than one occasion, which, however, did not interfere with the deduction drawn of the incubation period, as they were controlled by cases infected only on one occasion. In four out of the seven cases the results were successful, the patients developing typical dengue after a period of 6–9 days from being bitten; the temperature showed the double rise and a characteristic rash appeared (shown in a coloured plate). Marked itching was noted after the rash; this symptom they considered pathognomonic of dengue in a febrile complaint accompanied by a rash. Two of the successful cases had never been in a dengue locality and the other two, not for a time considerably longer than the incubative period. Blood taken from three of the successful cases reproduced the disease when injected into further non-immune persons. Two persons were bitten by the specimens of *Culex fatigans* brought from the infected district; though these were frequently fed on them they did not develop the disease. No known instance of contagion occurred from any of the successful cases. The authors therefore conclude that the disease is only conveyed by the *Stegomyia fasciata* after an incubative period of 5–9½ days. They regret that they were unable to elucidate many other important points owing to the stress of war work at the time. The paper however gives a very excellent account of experiments carefully planned and carried out, and proves conclusively that in Australia the infecting mosquito of the disease known there as dengue is the *Stegomyia fasciata*. The authors throw grave doubts on the transmission of the disease through *Culex fatigans* (ASHBURN and CRAIG, 1907).

P. W. B-S.

MALARIA.

GILL (Clifford A.). **Malaria in Muscat.**—*Indian Jl. Med. Res.* 1916. July. Vol. 4. No. 1. pp. 190–235. With 4 plates, 2 maps & 1 chart.

This report of observations continued during 13 months, from December 1914 to January 1916, is a fine piece of work—perspicacious, lucid, concise and, so far as political and service conditions permitted, remarkably complete.

In the interesting, ably-written, and well-illustrated preliminary sections dealing with physical topography, hydrography, geology, meteorology, etc., the author gives a picture of a sultry, barren, arid waste which on a priori grounds would not be regarded as malarious. But as this desert tract has, from its propinquity to the ocean, a decidedly humid atmosphere, and—lying at the foot of lofty mountains—contains a good deal of ground-water, which is tapped by wells and subterranean aqueducts; as also there is an appreciable rainfall (the annual average during eight recorded years being 4·5 inches); and as there are nullahs, and hollows in impermeable volcanic rock, where pools of rainwater may resist the process of evaporation for some months; the accommodation for mosquitoes is unexpectedly good. The author discovered the larvae of five species of Anopheles, namely, *culicifacies*, *funestus*, *stephensi*, *rhodesiensis*, and *cinereus*, the first three of which are notorious malaria carriers. Furthermore, the endemic indications of malaria, so far as the condition of the spleen could be investigated in the children of a diffident population, were high, and tertian parasites (chiefly the malignant variety) were found in the blood of most of the native inhabitants who could be got to be examined.

From ten years' records accessible to the author fever is noticed to be most prevalent in the seven months November to May with a maximum in December, and least dominant in the four months June to September with a marked declension in July–August. From eight years' records it appears that the fever season is fairly coincident with the season of precipitation, such rain as there is (the annual extremes being 0·92 inches and 8·06 inches and the mean being about 4·5 inches) usually falling between November and April. Anopheles larvae were observed by the author in every month except July and August, but were most abundant in April, November, and December.

In the section on malaria among the troops the author has some judicious remarks on quinine as a preventive. To begin with sulphate of quinine in solution, in 15 grain doses, was given to all the men of a regiment twice a week, and "this measure was not attended with success."

Subsequently a more exact method was adopted, the aim of which was by continuous and prolonged quinine treatment of all known cases of malaria and of splenic enlargement to extirpate the stock of infection from all human carriers within the military area. Every malarial patient when discharged from hospital, was placed on a malaria register and received 10 gr. of quinine sulphate in solution every day for six months. By this method all old fever cases were kept under observation and control, enlarged spleens were found to become reduced, and a continuous decrease in admissions for fever resulted.

Anti-mosquito measures are discussed but, as only a small portion of the area was under military control, only the Anopheles breeding-grounds in the immediate vicinity of the encampment could be treated. The author remarks on the difficulty and inconvenience of mosquito-nets in tents shared by ten men in such a sultry climate, and found that the more feasible method of excluding mosquitoes was to fit each door of the tent with a double screen of netting.

Various other points are considered with great discernment by the author, and though he himself did not see any cases of blackwater fever there is a short section on that disease based on notes of cases reported by the medical officer in charge of the Muscat Agency Hospital. Here, as elsewhere, it is associated with intense malaria.

The author has evidently made the most of his opportunities for observation not only of the immediate components of the local malaria problem, but also of all those factors—of climate, physiography, etc.—which influence them, and he is to be felicitated on having produced a report which is as scholarly as it is informative.

A. Alcock.

Baujean (R.). **Epidémie de polynévrite palustre simulant le béribéri.** —*Bull. Soc. Path. Exot.* 1916. Oct. Vol. 9. No. 8. pp. 634–647.

An account, with clinical abstracts, of six cases in which all the classical symptoms of beriberi, except anasarca, were found associated with a subfebrile temperature and a heavy infection of malaria parasites of two species. All the patients had been engaged in extremely laborious work as fishermen, and their only food besides fish had been decorticated and often damaged rice.

MM. Laveran and Kérandel, who commented on the paper, were disposed to regard the cases not as malarial polyneuritis, but as beriberi complicated with malaria.

A. A.

Mesa (Antonio). **Fiebre perniciosa.** [Pernicious Malarial Fever.]—*Rivista Clinica.* Medellin. 1916. Sept. Vol. 1. No. 2. pp. 71–72.

The author attributes an increase of malarial fever in the neighbourhood of the river Medellin (Republic of Colombia) to a diminution in the number of waterfowl, and in one case attributes the immunity of one of two contiguous houses to the ducks kept in it. Pernicious malaria is frequent, especially in children, in whom it commonly takes a convulsive form.

Two cases are noted in children, one of frequent epileptiform attacks, the other of complete amaurosis, both of which were relieved immediately by intravenous administration of quinine.

J. B. Nias.

Salom (C. E.). **Apreciones clinicas sobre paludismo.** [Clinical Observations on Malaria.]—*Gaceta Med. de Caracas.* 1916. July 15. Vol. 23. No. 13. pp. 99–102.

A paper dealing with the author's own experience of malaria as it occurs on the banks of the Orinoco. In the vicinity of Ciudad Bolivar the yearly prevalence of malaria can be shown to be very closely connected with the rise and fall of the river Orinoco and its tributaries. As

these rivers subside, they leave behind large collections of stagnant water, which become the breeding places of mosquitoes, and the season of greatest malarial prevalence therefore lies between the autumnal equinox and the winter solstice, that is between September 22nd and December 22nd. In his remarks upon this subject the author shows himself very clearly to be a partizan of Laveran's view as to the unity of the malarial parasite, like many other South American practitioners.

J. B. N.

McWalter (J. C.). **Malignant Malaria.**—*Med. Press & Circ.* 1916. Sept. 20. Vol. 102. No. 4037. pp. 270–271.

A general resumé of the author's own experience; nothing very new. As a rough clinical rule the author would say that cases of malaria which are not obviously benefited by quinine are malignant. The author would be loth to part with the belief that quinine cures malaria. He thinks that 45 gr. daily for some time is the limit of safety. As regards intravenous administration, he considers that if quinine will do good it is quite as effective by the mouth.

A. A.

Etienne (S.). i. **Reviviscence d'un ancien foyer de paludisme autochtone dans la vallée de la Seille.**—*Bull. Acad. Med.* 1916. Aug. 8. Vol. 76. Year 80. No. 32. pp. 118–120.

ii. **Sur la reviviscence d'anciens foyers paludiques en France.**—*Progrès Méd.* 1916. Oct. 5. No. 19. pp. 183–184. With 3 charts.

i. According to the author the valley of the Seille, with its liability to inundation and its natural difficulties of drainage, had long been regarded as a nidus of malaria—a belief justified by the existence locally of *Anopheles maculipennis*. One medical practitioner in the locality has frequently noticed, particularly since the return of old soldiers from North Africa, a malarial complication in his cases, especially in cases of influenza. In 1907 a case of malarial fever occurred at Nomeny in the valley, and recently six cases (benign tertian, quartan, and malignant tertian) have been observed by the author in soldiers stationed in or near the valley, who had never been in a malarious country. Along with these cases there were also some admissions of old soldiers of the Colonial and African services who had suffered from malarial fever at some anterior time and were now attacked again.

While allowing that the infection may have been imported, the author seems to think it equally probable that it is an indigenous survival.

ii. This paper emphasizes the author's opinion, expressed above, that there exist in France not only potential nurseries of malaria (i.e., marshy or ill-drained tracts harbouring *Anopheles maculipennis*) which may be infected (or reinfected) from re-patriated colonials who have suffered from malarial fever, but also actual foci where malaria has never become extinct but has persisted in a modified or masked form ("larval malaria").

The author points out the urgency of preventive measures – drainage, extermination of Anopheles –sterilisation of human carriers by means of quinine.

A. A.

Martyn (G. J. King). **Malaria in Men returned from France.** [Correspondence.]—*Brit. Med. Jl.* 1916. Sept. 30. p. 473.

The writer tells of a case from the Expeditionary Force, which, diagnosed to begin with as influenza, and afterwards sent home as trench fever, was ultimately discovered to be malaria. He also refers to another case, of a wounded man sent home from the Force, where rises of temperature supposed to be due to pent up discharges were at length accounted for by the discovery of malarial parasites in the blood. Altogether he knows of about fifteen cases invalided from the front, in which unsuspected malaria parasites have been revealed by blood examination.

The writer no doubt does well in drawing attention to such cases, and to the possibility that malarial infection might be spread from them to the resident population of these islands. But seeing how, for years and years past, soldiers, sailors, and civilians of all sorts and conditions have been returning home from India, from the tropical colonies, and from other foreign parts, with malaria-parasites in their blood and bones, it is doubtful whether commentators on Dr. King Martyn's cases do so well in magnifying this possible danger and adding it to the distressing realities of the Great War.

A. A.

Jeanselme (E.). **Cas de paludisme autochtone contracté en France au contact des troupes indigènes.**—*Bull. Soc. Path. Exot.* 1916. Nov. Vol. 9. No. 9. pp. 693–694.

Case of a wounded soldier who had lived in Paris until he went on service, first on the Meuse then on the Somme. He was admitted in September into the hospital at Beauvais, and lay in a surgical ward along with wounded men from the Martinique and Annam contingents. Ten to twelve days after admission he had a severe attack of malarial fever which lasted with quatridian intermissions for fifteen days. He was treated with quinine, and after recovery from the fever he still had symptoms of latent malaria and a slightly enlarged spleen. No examination of the blood seems to have been made until after recovery from the acute stage; then the uninuclears were very greatly increased, but parasites were not found. The author draws the obvious moral as to the necessity of isolation, or other preventive measures, in dealing with the wounded from the colonial contingents.

A. A.

McWalter (J. C.). **Fatal Malaria with Tubercle Bacillus.**—*Med. Press & Circ.* 1916. Oct. 4. Vol. 102. New Ser. No. 4039. p. 321.

It would appear that the author offers this case as an exercise for the dialectician resolute to reconcile the spirit of scientific caution with the letter of the official returns.

A patient was admitted comatose, with strabismus, and a temperature of 104°. He had lost his papers; there was no history; and he died about eight hours afterwards without having recovered consciousness.

He was treated with quinine both subcutaneously and rectally, subtertian parasites having been found in the blood.

At the autopsy the spleen was enlarged (22 oz.) and the liver slightly (64 oz.); there were two caseous nodules in the left lung, and also a cavity, the scrapings from which contained tubercle bacilli; the right lung was slightly oedematous and slightly emphysematous; other organs healthy.

The author decides—and upon the facts as presented and for the immediate purpose of the decision his conclusion is quite a reasonable one—that the immediate cause of death was not pulmonary tuberculosis.

A. A.

Fernandez Sanz (E.). **Un caso de encefalopatia paludica.** [A Case of Cerebral Disease due to Malaria.]—*Siglo Med.* 1916. Aug. 12. Vol. 63. No. 3270. pp. 514–517.

The history of a case presenting cerebral symptoms, which were apparently due to malaria.

The patient was a girl, aged 13 years, inhabiting a malarious locality. Four years previously, when she was 9 years of age, she had an attack of malarial fever, which lasted for 15 days. It was noticed, on convalescence, by the parents that the girl spoke indistinctly and with a snuffling tone of voice, and that she stammered and became very tired on walking, but these symptoms were put down to debility. Three years later she was again attacked by a similar illness, and on the ninth day, in the middle of a febrile paroxysm, she was seized with unconsciousness and epileptiform convulsions, on recovery from which it was noticed that the left side of the face was paralyzed, and that there was also a loss of power in the lower extremities. Twelve months later she came under the notice of the author for the first time.

The diagnosis was made of a unilateral haemorrhage in the region of the origin of the hypoglossal and vagus nerves, arising in the course of the first malarial attack, and exacerbated by the second one.

J. B. N.

Rathery (F.) & Lévy (F.). **Eruption purpurique généralisée à très larges éléments chez un paludéen.**—*Bull. et Mém. Soc. Méd. des Hôpit. de Paris.* 1916. July 13. 3 ser. Vol. 32.. No. 23-24. pp. 1095–1099. With 2 text-figs.

The eruption is described as involving every part except the head and neck. The spots, which were of a bright red colour and well defined, varied in size from a franc to a five-franc piece; at the gluteal and popliteal folds and the elbow, and also on the scrotum, they were uniformly confluent; they disappeared slowly, with fine desquamation and concurrent itching, and could still be made out as yellowish blotches at the end of several weeks

The eruption was at a climax when the patient was admitted to hospital, with a clinical history of a paroxysm of malarial fever two days before, which lasted four hours and was followed immediately by the rash.

The patient had contracted the malaria about six years before, and he stated that every three or four months since then the eruption had

appeared, beginning always on the palms and scrotum, and preceded by acute and even painful itching.

On examination there was enlargement neither of the liver nor of the spleen, neither jaundice nor haematuria ; the heart and lungs appeared to be sound, and the urine was normal, except for some traces of albumin at the time of admission.

During his stay in hospital the patient had one paroxysm of fever, and on that occasion only—which was 32 days after admission—*Plasmodium vivax* was found in the blood.

A. A.

Davis (Wm. T.). **Ocular Complications of Malaria and the Toxic Effect of Quinine upon the Eye.**—*Southern Med. Jl.* 1916. Sept. Vol. 9. No. 9. pp. 769–773.

The author surveys, for the benefit of the general practitioner at a distance from special help, the pathological changes in the eye that have been associated, by different observers, with malaria, and also the toxic effects of quinine upon the eye. He quotes a statement of Parsons that eye complications occur in ten per cent. of cases of malaria, complications that may affect the conjunctiva, cornea, iris, choroid, retina, lens, vitreous, etc.

Most of the observers cited mention keratitis and ulceration of the cornea, optic neuritis, retinal and other haemorrhages and thrombosis, and paralysis of accommodation and of the muscles of the eyeball. One author suspects malaria in rapid cataract occurring in young persons, and another in recurrent paralysis of the third nerve. A formidable list is quoted from Dr. Schweinitz—malarial neuralgia and intermittent ophthalmia, conjunctivitis with sub-conjunctival haemorrhages, herpes of the cornea, corneal ulcer and interstitial keratitis, intermittent amaurosis and blindness, retinal ischaemia, optic neuritis, haemorrhages into retina and vitreous, central scotoma, hemianopsia, night-blindness, spasm of the accommodation, paralysis of the external muscles.

Regarding the toxic effects of quinine the author refers to Dr. Schweinitz's experiments upon dogs, seen in contraction of the retinal vessels, degeneration and atrophy of the optic nerve and tracts, thrombosis, degenerative changes in the ciliary ganglion and changes in the choroid. Among the toxic effects noticed in man are amaurosis, amblyopia, colour-blindness, night-blindness and other impairments of vision. Such effects would only be likely to follow unlimited doses, but temporary amaurosis has occurred after small doses.

A. A.

Paisseau (G.) & Lemaire (H.). **Surrénalites aiguës dans les accès pernicieux palustres.**—*Bull. Acad. Méd.* 1916. Oct. 17. Vol. 76. Year 80. No. 41. pp. 300–301.

In the course of certain attacks of pernicious malaria the authors have noticed symptoms attributable to some implication of the suprarenal capsules, namely reduced arterial tension without change in the heart-rhythm, vomiting, diarrhoea, lumbar and abdominal pain, asthenia, and the phenomenon of Sergent-Blanchard's white line.

In three autopsies confirmatory lesions in the suprarenal capsules have been observed: in one case of rapidly fatal coma and arterial collapse degenerative changes were found: in a second case—algid, temperature 95·1° Fahr., diminished arterial tension—pronounced cellular degeneration and haemorrhages; in a third case—diminished arterial tension, white line, marked asthenia, vomiting, diarrhoea, lumbar pain—the suprarenal capsules showed arterial thrombi, haemorrhages, and patches of cellular degeneration and even of necrosis. In all three cases there were no sufficient changes in kidney, liver, or spleen to account for death.

The authors conclude that in the treatment of these algid cases of malaria adrenalin should be used in addition to quinine.

A. A.

Forster (E.). **Isolierte Musculo-cutaneous Lähmung bei Malaria.** [Musculo Cutaneous Paralysis in Malaria].—*Monatschr. f. Psychiat. u. Neurolog.* 1916. Oct. Vol. 40. No. 4. pp. 262–264. With 1 text-fig.

An abstract and brief chronicle of a case of malaria in a seaman, in which in the course of an attack of benign tertian there occurred pain and weakness in the right upper arm which by careful investigation—electrical and other—was traced to the middle head of the biceps, all the other muscles being normal and sensation being unaffected, the biceps alone failing to contract. The diagnosis of malaria was inferred from the symptoms, and the condition of the spleen, and was established by the discovery of rings and schizonts in the blood. About four months after the onset of the nerve-symptoms, degeneration reaction could still be elicited though the biceps had recovered some power of contraction.

A. A.

Waters (E. E.). i. **The Value of Quinoidine in Malaria.**—*Indian Med. Gaz.* 1916. Sept. Vol. 51. No. 9. pp. 335–338. With 3 charts.

ii. **Quinoidine and Malaria.** [Correspondence.]—*Ibid.* Nov. No. 11. p. 437.

i. The author criticises the inference of MacGilchrist that quinoidine is the least effective of all cinchona products [see this *Bulletin*, Vol. 7, p. 18], on the ground that MacGilchrist's experiments, showing that quinoidine was the most lethal of all to guinea-pigs and the least lethal of all to Protozoa, were inadequate. He discounts the opinions adverse to quinoidine expressed by some medical officers in Lower Bengal, on the reasonable ground that they are not based on any rigorous observations or exact experiments.

On the other hand he quotes statistics from the Madras Hospital to the effect that four grains of quinoidine daily, administered in two doses, were sufficient, in a series of 250 cases, to bring down the temperature and to cause the disappearance of malaria parasites from the peripheral blood in 72 hours, or less; and further statistics of 105 cases from the same source showing that quinoidine to the extent of six grains daily gave as good results as either quinine hydrochloride or quinine sulphate to the extent of fifteen grains daily. He also

quotes opinions favourable to quinoidine, which apparently were based on blood-examinations and exact observations, from medical officers at Wardha and in Sikkim.

At Howrah 2,618 cases of malarial fever, in all of which the diagnosis was confirmed by microscopic examination of the blood, were treated with quinoidine, with satisfactory results. At Lillooah and Bally in the Howrah district, of six thousand cases two thousand were treated with quinine and four thousand with quinoidine, with the result that quinoidine was proved to be at least as efficacious as quinine.

In the author's experience quinoidine is equally good as a preventive of malarial fever. In a school of 402 boys a six months' course of quinoidine reduced the spleen-index from 33 per cent. at the beginning to 7 per cent. at the end. In another collection of 700 children the spleen-index fell from 14 per cent. to 8 per cent.

A great recommendation of quinoidine is its low price—four rupees (5*s.* 4*d.*) per lb.

In using quinoidine the author considers it important to start with a simple purge.

ii. A note of reference to the paper summarised above. The author recommends daily administration of 12 to 24 gr. quinoidine-picrate in malignant tertian cases.

A. A.

NEFF (Frank C.). **Report of Five Cases of Tertian Malaria Treated with Diarsenol Intravenously.**—*Jl. Amer. Med. Assoc.* 1916. Oct. 7. Vol. 67. No. 15. pp. 1059–1060.

The writer admits that from relatively short observation of but five cases no far-reaching conclusions can be drawn.

The subjects were little girls from 5 to 11 years old who, when admitted, had suffered for nine months or longer, had the spleen much enlarged, and had been treated with quinine; in four cases parasites were found in the blood. The intravenous dosage of diarsenol ranged from 0·1 gm. for a child of 5 years to 0·4 gm. for a third operation in a child of 11 years; the cases were under the treatment for about three weeks, and none received more than three injections during that time.

The results observed were speedy cessation of symptoms, immediate disappearance of parasites from the peripheral blood, marked gain in weight, and considerable reduction in the size of the spleen.

A. A.

MPOTSE (Demetrios). ΜΠΟΤΣΗ (*Δημητριου*). 'Η 'Εκτίνη *ἐν τῇ θεραπείᾳ τῆς ἑλονοσίας*· [Hektine in the Treatment of Malaria.]—„'Αρχεῖα Ιατρικῆς". (*Arch. de Méd.*). 1916. May 1–20. Vol. 11. No. 13–15. pp. 145–148.

Brief notes of four cases of malaria in young sailors, selected out of a total of 22, in which hectine was employed with very successful results. In the first case it was only given after failure with quinine, the patient being then in a desperate condition, but in the other three cases it was employed from the outset. The temperature generally dropped to normal, permanently, after the first dose. In all the four cases the presence of plasmodia [type not stated] in the blood was verified by microscopic examination.

According to the author, the action of hectine is mainly exercised on the parasites when they are in the schizont stage in the blood, and therefore its employment seems to be chiefly indicated in recent cases of infection.

J. B. N.

Zangger (Theodore). **Tepid Baths in the Treatment of Malaria.** [Correspondence.]—*Lancet.* 1916. Sept. 16. p. 538.

The writer, practising in an Alpine health resort more than 4.000 feet above sea-level, has there had charge lately of some invalided German prisoners-of-war, fifteen of whom were suffering from periodic attacks of malarial fever. He treated them with tepid baths three times a week and—so far as his published record goes—with nothing else.

The writer states that when these fifteen men were prisoners in Algiers, Corsica, and other French hospitals of unspecified locality, and were treated regularly with quinine, they collectively had 107 paroxysms of fever per month. When they were transferred to the Alpine health resort and were, at first, under "intermediate quinine treatment," they still ran up an aggregate of 65 attacks per month. Afterwards, when they were under the tepid bath treatment, the collective number of attacks fell to five per month.

The argument is vague, and the predicates are indefinite, but the writer appears to leave it to be inferred that the improvement in the condition of these fifteen patients estimated collectively is due entirely to tepid baths.

A. A.

Mitzmain (M. Bruin). **Anopheles Infectivity Experiments. An Attempt to determine the Number of Persons one Mosquito can infect with Malaria.**—*U. S. Public Health Rep.* 1916. Sept. 1. Vol. 31. No. 35. pp. 2325–2335. With 2 plates.

To validate these very important experiments the blood of the volunteers who offered themselves for sacrifice was first properly shown to be free of malaria parasites, and the off-season for malaria was chosen. The insects used were *Anopheles punctipennis* which 10–22 days antecedently had been fed on a patient whose blood was known to contain gametocytes of *Plasmodium vivax*. The simple experiment of allowing single infected mosquitoes to bite each one a succession of individuals during the remainder of its life was not tried, as it was feared that the mosquitoes available were not sufficiently vigorous to justify a long expectation of life.

One mosquito lived 16 days after its infection was presumed to be fully developed, and bit twelve people at intervals during those 16 days. In the first seven instances the persons bitten (who all became infected in due course) were also bitten by another infected mosquito; in the eighth and ninth bitings it had the experimentees all to itself on the 14th day after its infection was established—and it infected both of them. In the 10th, 11th, and 12th bitings, these being the 15th and 16th days after infection, the experimentees never showed any signs of infection.

Another mosquito lived 12 days after its infection was judged to be developed, and bit eleven people, but in only one instance—this one

being on the 6th day after its infection was established and the seventh time of biting did it have an experimentee all to itself, and in this case the experimentee became infected.

It was demonstrated by eleven experiments that bites of short duration (incomplete feeding) were sufficient to transmit infection.

A. A.

Lawson (Mary R.). **Distortion of the Malarial Parasite. An Interpretation of** *Plasmodium tenue* (Stephens).—*Jl. Experim. Med.* 1916. Sept. 1. Vol. 24. No. 3. pp. 291–314. With 9 plates.

In the author's own summary it is stated that the form described by Stephens as *Plasmodium tenue* is not a new species or even an amoeboid shape, but merely a parasite distorted by incidental manipulation: that such forms are to be found in all malarial infections and at any stage of development, and that they may occur in only one of two cover-slips taken from the same drop of blood, or in definite groups (and sometimes distorted all in one direction) in a film containing parasites of normal appearance.

The argument, of which this is the summary, although it is accompanied by 269 figures, consists very considerably of assumption and asertion, the largest of which is that "all malarial parasites are extracellular throughout their entire life-cycle." Although they are attached to the outer surface by "corpuscular mounds," the parasites may become distorted by manipulation that leaves the corpuscle itself unchanged, and even their pigment may be distorted by treatment that does not otherwise affect the parasite.

In her criticism of other observers the writer seems hardly to realize that most experienced workers in the fields of exact science understand the necessity of allowing for probable errors of observation, manipulation, etc., before formulating their generalizations and, further, that if the postulate of the fallibility of poor human methods be arbitrarily or partially applied all studies, protozoology included, become mere stumbling in dark Cimmerian desert.

A. A.

Swellengrebel (N. H.). **Over de zoogenaamde "Intraglobulaire conjugatie" van den Tropicaparasiet** (*Laverania malariae*). [On the So-called "Intraglobular Conjugation" of the Parasite of Tropical Malaria].—*Nederl. Tijdschr. v. Geneeskunde.* 1916. No. 11. pp. 914–923. With 68 text figs.

A paper discussing the mode of re-infection in pernicious or aestivo-autumnal malaria fever, especially with regard to the occurrence of a syzygy or conjugation of the plasmodia within the red cells, as postulated by Craig and others. As the letter press of this memoir is mainly in the nature of a comment on the appearances shown in the 68 drawings, and is also full of references to the conclusions of other writers whose papers are not to hand, it is not very easy to make an abstract of it. The specialist may therefore with advantage be referred to the original.

J. B. N.

Marcandier (André). **La résistance globulaire dans quelques cas de paludisme, de fièvre bilieuse hémoglobinurique et de maladie du sommeil.**—*Bull. Soc. Path. Exot.* 1916. Oct. Vol. 9. No. 8. pp. 647–665.

The object of these researches was to determine whether in malarial patients the resistance of separated red-blood cells to the solvent action of saline solutions so varied during the course of the disease that the onset of haemoglobinuria could be foreseen; and, further, whether their resistance always became normal immediately after the haemoglobinuric attack, or might be so altered that a relapse could be predicted.

As regards the first inquiry, in only one out of thirteen observations—that one being a heavy infection in full swing—was there a slight diminution of resistance, and in this instance there was no haemoglobinuria; in the other twelve observations the resistance, as determined by comparison with controls, was normal.

As regards the second inquiry, in two out of five observations the resistance at the decline of an attack of haemoglobinuria was slightly diminished, and the author's conclusion is that the resistance returns to normal after an attack, leaving no evidence from which predictions can be made.

The result of the inquiry in the case of sleeping sickness is given elsewhere.

A. A.

Macdonald (Angus). **The Position of Malaria in Sanitary Administration.**—*Trans. Soc. Trop. Med. & Hyg.* 1916. Nov. Vol. 10. No. 1. pp. 1–15. With 12 plates comprising 12 figs.

This, so far as malaria is concerned, is a zealous plea for committing the responsibility for prevention entirely to the Medical Officer of Health, who would maintain a routine system of domiciliary inspection legally reinforced, would personally direct and supervise all measures for the control of Anopheles mosquitoes by the limitation, suppression, etc. of their breeding places, and would attend to the education of the proletariate both by public lectures and by individual conversation. It would also be the business of the M. O. H. to scrutinize the death reports and to call for returns of all cases of malaria treated in public institutions, so as to follow up every case of malaria with appropriate sanitary vigilance as in the case of notifiable infectious diseases. The author lays great stress on the sustained control of the temporary breeding-places of Anopheles in the vicinity of dwellings: he is emphatic in his opinion that the sanitary administration has no use for quinine, which should be left entirely to the physician.

A. A.

Barbieri (Antonio). **La campaña antipalúdica durante el año 1914 en la República Argentina.** [The Antimalarial Campaign in the Argentine Republic in 1914.]—*Malariologia.* 1916. Oct. 31. Ser. 2. Year 2. No. 5. pp. 124–132.

The economical troubles arising out of the European war have compelled the authorities in the Argentine Republic to restrict the

scope of the anti-malarial campaign initiated by the Government, very materially. It has been necessary to reduce both the amount of money voted for the purpose and the personnel employed, and for the same reason it has been impossible to set on foot any hydraulic or engineering works. Quinine, however, has been freely distributed in selected malarious localities, both for preventive and for curative purposes, the quantity used being slightly over one million grammes, of which 945,876 were used in treatment, and 87,047 for prophylaxis. The number of patients treated amounted to 175,875, of whom 25,384 were first infections, and 150,491 relapses or chronic cases. The cases included 109,309 of tertian, 18,368 of quartan, 2,368 of aestivo-autumnal fever, and 45,820 mixed infections. The districts selected for the campaign were chosen according to the rate of splenic index in children, and by blood examinations, the population of the affected zones being calculated at about one million of inhabitants, of whom 50 per cent. may be taken as affected with malaria.

J. B. N.

Koltes (F. X.). **Prevention of Malaria in the Field.** —*U.S. Nav. Med. Bull.* 1916. Oct. Vol. 10. No. 4. pp. 640–642.

The writer being ordered to combat an outbreak of malaria in a naval outpost, found that mosquito-nets either were being improperly adjusted, or were torn or not used at all, and also that the preventive use of quinine had been relaxed. Rational instruction was imparted to the men, the regulations regarding mosquito-nets and the daily ration of quinine were strictly enforced, and a campaign against mosquitoes was started, with the result that at the end of two weeks new cases had "practically ceased."

The writer is confident in quinine as a preventive in the field, where the full military strength must be maintained.

A. A.

Granada (S. H.). **Ervaringen met prophylactische Chinineverstrekking.** [Experiences with Prophylactic Quinine Distribution.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1916. Vol. 56. No. 4. pp. 516–523.

In this paper the author details his experiences with prophylactic distribution of quinine in a particularly malarious region in the Malay Straits (Tandjong Pinang, Riou Archipelago). His conclusion is that prophylactic treatment with quinine, while of benefit as regards tertian and quartan ague, is of comparatively little efficacy as regards subtertian. In the station where the experiments were made, the proportion of cases of subtertian to tertian and quartan combined was approximately as two to one for soldiers, and not much less for their wives and children, and for civilians. The quinine was administered twice a week (Wednesday and Saturday) in tablets in doses of 0·4 gm., which was afterwards increased to 0·6 and 0·8 gm. for adults, and proportionately less for children. The tabulated results for each class show a relatively greater reduction in tertian and quartan than in subtertian, but the data are insufficient.

J. B. N.

Ross (E. Halford); Hall (G. C.); Whitfield (Arthur). **Quinine Parades.** [Correspondence.]—*Lancet.* 1916. Sept. 9 & 16. pp. 495 & 538.

From the premise that quinine will not prevent malaria Dr. Halford Ross shifts to the conclusion that the regular issue of quinine to the troops at Salonica, with the object of protecting a field force from malarial fever, is useless. Shifting the ground still further, he protests against State attempts to check tuberculosis and syphilis by uniform remedial treatment of individual sufferers from those diseases.

Lt.-Colonel G. C. Hall endorses the opinion of Dr. Ross as to the uselessness of quinine in malaria.

Dr. Whitfield points out that Dr. Ross has "exhibited some mental confusion" in comparing syphilis and malaria from a preventive standpoint, and very reasonably remarks that to attempt to prevent syphilis by other means than curative treatment of the infected individual would cause a good deal of surprise.

A. A.

Ciampolini (Arnolfo). **L'infezione malarica e la "causa violenta" (art. 7 della Legge infortunii).** [Malarial Infection and Trade Risk (Article 7 of the Employers' Liability Act).] *Ric. Crit. di Clin. Med.* 1916. Sept. 23 & 30. Vol. 17. Nos. 39 & 40. pp. 499–501 & 509-513.

In this paper the author, who is a medical officer of the Italian State Railways, discusses the question whether, under the Italian laws of compensation for accidents, infection by malaria, contracted in the course of duty by a railway employé, does not stand on the same footing as infection by anthrax or glanders in other employments, so as to entitle the sufferer to compensation. The question is one of some practical importance in a country like Italy, where healthy railway employés may be sent, in the course of duty, to malarious sections on the line, and there contract fever. He cites three instances of the kind, within his own knowledge.

J. B. N.

Parrot (Louis). **Le traitement du paludisme en Algérie au commencement de 18e siècle d'après Abderrezzaq-ed-Djezaïri.**—*Malariologia.* 1916. Aug. 31. Vol. 9. No. 4. (Ser. 1). pp. 97–100.

Some extracts from a work entitled "Kachef er remouz" by Abderrezaq Ed Djezairi, translated as "Revelation des Enigmes," by L. Leclerc (Baillière et Leroux, Paris, 1874). The book is said to have been written a little before the year 1717. It is stated here to be a sort of Materia Medica arranged alphabetically, and, as regards its character, a singular medley of close observations, wise saws, superstitions, and quackery.

A. A.

Christophers (S. R.). **A Revision of the Nomenclature of Indian Anopheles.**—*Indian Jl. Med. Res.* 1916. Jan. Vol. 3. No. 3. pp. 454–488.

This is a valuable paper. Far from being, as its name unfortunately implies, solely concerned with the weary and contentious subject of nomenclature, it is full of facts, which are concisely stated and well arranged.

For every Indian species, so far as its history is known, the author records the range and distribution, the habits and breeding-places, and the evidence (if there be any) of its relation to malaria. Such facts, collated and confirmed by an author of such competence, are of permanent value to the world.

The following species are here recorded among the natural carriers: *A. culicifacies* Giles, *A. fuliginosus* Giles, *A. funestus* var. *listoni* Liston, *A. ludlowii* Theobald, *A. maculatus* Theobald, *A. maculipalpis* Giles, *A. minimus* Theobald, *A. stephensii* Liston, *A. willmorii* James.

The following species are recorded as open to experimental infections: *A. theobaldi* Giles, *A. turkhudi* Liston.

As regards the following species the evidence is conflicting:—*A. barbirostris* Van der Wulp, *A. rossi* Giles, *A. sinensis* Wiedemann.

A. A.

Christophers (S. R.). **An Indian Tree Hole Breeding Anopheles. *A. barianensis*, James = *A.* (*Coelodiazesis*) *plumbeus*, Halliday.**—*Indian Jl. Med. Res.* 1916. Jan. Vol. 3. No. 3. pp. 489–496. With 1 plate.

The egg, the larva, the pupa, and the adult of this species, which seems to breed exclusively in holes in trees, are described, the first two states being also figured. The water in the holes where the larvae were found was as dark as tea or coffee. Adults were frequently found resting during the day in hollow trees. The author identifies the species as *Anopheles plumbeus* Halliday, and includes in its synonymy *A. nigripes* Staeger, *A. barianensis* James, and questionably *A. barberi* Coquillet. In India the species seems to be restricted to the Western Himalayas, an area which is on the very border of the Palaearctic Region.

A. A.

Schueffner (W.) & van der Heyden (H. N.). **De anophelinen in Nederlandsch-Indië.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1916. Vol. 56. No. 4. pp. 381–396. With 6 figs.

After some discussion of nomenclature and some re-descriptions of species the author gives a key for the determination of 15 species of Anopheles found in Netherlands India, and in a postscript mentions *Anopheles gigas* Giles as a sixteenth species occurring in that political area of the Oriental Region.

A. A.

Correction.

In No. 6 (October 30th) of Vol. 8 of this *Bulletin*, at page 354, in a notice of a paper by W. V. King on the development of malaria parasites in American species of Anopheles, which was published in the *Journal of Experimental Medicine* for June, 1916, it is incorrectly stated that the malarial susceptibility of *Anopheles crucians* is for the first time actually demonstrated by the experiments recorded in that paper.

As a matter of fact the susceptibility of *Anopheles crucians* to infection with *Plasmodium falciparum* was demonstrated as long ago as 1902 by Professor Beyer and his colleagues, and the susceptibility of this species to infection with *Plasmodium vivax* was demonstrated by M. Bruin Mitzmain in March 1916 as indeed has already been appreciated in this *Bulletin* [Vol. 8, p. 40] in a notice of a paper by the last-named author which was published in the *U.S. Public Health Reports*, Vol. 31, No. 19, May 12th, 1916.

A. A.

BLACKWATER FEVER.

Ott (William O.). **Hemoglobinuric Fever treated by Infusions containing Quinin.**—*Jl. Amer. Med. Assoc.* 1916. Sept. 16. Vol. 67. No. 12. pp. 872–874. With 1 chart.

The patient, a white man, age 35, had lived in a malarious district for six months prior to admission and had endured several attacks of malarial fever, for which at times he had taken large amounts of quinine. On admission to hospital his temperature was 103° F., the urine was scanty and almost coffee-coloured, he was deeply jaundiced and vomited a yellowish fluid at intervals, his spleen was enlarged, and there was tenderness all over the upper part of the abdomen. No parasites were detected in the blood then or subsequently. Quinine was given by the mouth but was not retained. The general condition became worse, and the urine darker. The day after admission he received three intravenous injections of 10 grains of bihydrochloride of quinine in 300 cc. of saline solution: the day following, two such injections; and the next day, one. On the fourth day the urine was free and quite clear, the jaundice had almost disappeared, the spleen was considerably reduced, and quinine given by the mouth was retained.

In his very full comment on the case the author, while justifying the use of quinine, appreciates the value of saline infusions *per se*.

A. A.

Nalini Nath Sen Gupta. **Interesting Cases from the Medical Wards of the Medical College Hospital, Calcutta.**—*Indian Med. Gaz.* 1916. Nov. Vol. 51. No. 11. pp. 416–420. [Case III. A Case of Blackwater Fever, illustrating the Effect of Quinine and a New Method of Treatment. With Comments by Major D. McCay, I.M.S. pp. 417-420.]

Case of a Chinaman, 45, admitted for malarial fever and jaundice; on admission there was increased cardiac dulness, slight enlargement of liver and spleen, much albumin in the urine, which reacted for haemoglobin but contained no red cells. No malaria parasites were found, and the urine cleared up in two days.

The case was diagnosed as blackwater fever, and was treated with quinine bihydrochloride, 5 gr. thrice a day.

After six days treatment there was a serious relapse of haemoglobinuric fever, the urine being almost the colour of porter. Two pints of hypertonic saline (1·2 per cent.) to which 0·03 per cent. of calcium chloride had been added were injected intravenously, the patient "probably beginning to improve" before its administration. Within a few hours the urine cleared, and the patient rapidly improved, and after a three weeks' course of tonics and calcium he was discharged "practically all right."

In an ingenious argument the commenting author suggests that the malaria parasites can produce a haemolysin, and that this haemolysin may remain active and ready to take advantage of favouring conditions of the plasma (the advent of a suitable complement) after the parasites

themselves have disappeared. He suggests further that, assuming the persistence of the haemolysin, and assuming the co-existence of a certain but insufficient amount of the complement, the administration of quinine may be the spark that causes the haemoglobinuric explosion. The possibility of the opposition of a specific anti-haemolysin is admitted, but is discounted by an assumption that the anti-haemolysin may be weak or unstable, or that it may be formed only in the very act of haemolysis.

In this particular case in administering the hypertonic saline the ntention was to counteract the swelling of the red blood cells that occurs in haemolysis, since the hypertonic solution is known to cause their contraction, and the calcium chloride was added since it has been observed experimentally, even in the minutest quantities, to prevent haemolysis.

A. A.

PLAGUE.

Geneeskundig Tijdschrift voor Nederlandsch-Indië. (Bijblad van het). Deel 55. No. 3. 1916. 24 pp. With 2 charts.— **Dienst der Pestbestrijding. Verslag over het derde kwartaal 1915.** [Report of the Plague Eradication Service for the Third Quarter of 1915.]

As in previous communications of a similar nature, this report is divided into four parts: (1) Management and personnel; (2) Investigation and clinical service; (3) Disinfection service; and (4) House service.

The following Table shows the case-incidence of plague in the various districts of Java for the third quarter of 1915, comparison being made with the corresponding quarter of the four preceding years. The figures in parentheses refer to cases of pneumonic plague:—

District.	1911.	1912.	1913.	1914.	1915.
Malang	394 (12)	424 (5)	2018 (2)	2252 (142)	74 (11)
Bangil	—	—	22	2	1
Kediri	30	102	1103	1687	332 (20)
Toeloeng-Agoeng	—	5	147	157	11 (1)
Berbek	—	—	72	27	6
Blitar	—	—	2	—	4
Soerabaja ..	3	—	93	308 (1)	41
Lamongan ..	—	—	6	13 (1)	2
Sidoarjo ..	—	—	—	5	5
Modjokerto ..	—	—	—	3	4
Djombang ..	—	—	—	—	7
Madioen ..	14	15	144	262	3
Magetan ..	—	—	337	263	—
Ngawi	—	—	7	1	—
Ponorogo ..	—	—	—	2	—
Pamekasan ..	—	—	—	6	—
Bangkalan ..	—	—	29 (2)	14	—
Soerakarta ..	—	—	—	1	150 (5)
Totals ..	441 (12)	546 (5)	3980 (4)	5003 (144)	630 (37)

Thus for the quarter there were 4,373 less cases than in the corresponding quarter of 1914 and 3,350 cases less than the similar quarter of 1913. On the other hand, the number of pneumonic cases was absolutely greater than in 1913 and relatively greater than in 1914.

The number of rats brought in for examination was small. Out of 87 "go-downs" 376 rats were trapped and were all negative for pest, on examination. The flea-indices of the house rats and on *Mus Norwegicus* were very high—5·4 and 5 respectively. This high flea-index would either point to a "secondary concentration" due to abnormal rat mortality or to unusual conditions obtaining in the locality in which the rats were trapped.

R. St. John Brooks.

Kermorgant. **Epidémie de peste qui a sévi à Dakar et au Sénégal d'avril 1914 à février 1915.**—*Bull. Acad. Méd.* 1916. Aug. 22. Vol. 76. Year 80. No. 33. pp. 126–133.

Plague was introduced into the port of Dakar, Senegal, in the month of April, 1914, and from there extended, by means of secondary foci, throughout the colony and to the neighbouring islands of Cape Verde. The disease was introduced from either Bahia, Brazil, or more probably from Casablanca, infection being carried on board the steamer "Mingrélie," which arrived from Morocco on the 6th April. The epidemic in Dakar lasted nine months—from the 15th April 1914 to the 15th January 1915. Out of a population of some 20,000 persons the malady accounted for 1,425 deaths (without counting concealed cases), showing a minimum mortality of 54 per 1,000.

Amongst the European population there were seven cases with three deaths. During the period under consideration, probably about 8,000 deaths from plague took place in the entire colony. The cases were of the pneumonic, septicaemic or bubonic variety, but the early infections were all pneumonic and were unassociated with a murine epizootic.

Energetic measures for the suppression of the disease were carried out, in spite of great opposition from the Mussulman population. The native portion of the town was evacuated and subsequently destroyed; 3,000 inhabitants were transferred, with their baggage, to an isolation camp. In the infected centres in the interior of the colony, isolation camps were constructed both for the sick and for suspected contacts. After a period of 12 days, the sick or suspects, after having submitted to two inoculations with Haffkine's prophylactic, were removed to a specially prepared village. The routine prophylactic doses employed were 1 cc., ·25 cc. and ·5 cc. at intervals of five days. The sites of abandoned villages, isolation camps and cemeteries, after having been sterilised with burning grass and brush-wood, were surrounded with tree trunks and thorn-wood and the natives were formally forbidden to erect habitations on or cultivate the soil of such enclosures. These measures proved to be most effective.

R. St. J. B.

di Mattei (Eugenie). **Il reperto batteriologico delle secrezioni catarrali delle vie respiratorie, nelle varie specie di peste cutanea.** [Bacteriological Examination of Catarrhal Secretions of the Respiratory Passages in Different Kinds of Cutaneous Plague.]—*Malaria e Malat. d. Paesi Caldi.* 1916. July–Aug. Vol. 7. No. 4. pp. 225–229.

The author divides "cutaneous plague" into three classes:—(*a*) primary carbuncle, (*b*) bubonic plague, and (*c*) septicaemic plague. As the result of his observations during the plague epidemic in Catania during the autumn of 1914, he has arrived at the conclusion that in nearly all cases of "cutaneous" plague, pathological changes take place in the respiratory tract, varying from the lightest form of simple catarrh to grave forms of congestion and specific broncho-pneumonia. This correlation is much commoner than is generally supposed; slight

pulmonary symptoms may be overlooked by the clinician, while on the other hand, when the symptoms are well marked, the observer may be impressed in favour of a diagnosis of primary pneumonic plague.

It would appear that in the cases examined bacteriologically, plague bacilli were demonstrated in the sputum, even in cases where there were no definite signs of pulmonary localization. In bubonic cases, a respiratory affection may accompany or even precede the appearance of the bubo and the bronchial secretion may afford good evidence for bacteriological diagnosis before the bacilli can be demonstrated in the bubo exudate. Without detracting in any way from the value of the bacteriological examination of the bubo, the early examination of the sputum, in cases of bubonic plague, might often lead to an earlier diagnosis.

R. St. J. B.

Kuriazides (K. N.). ΚΥΡΙΑΖΙΔΟΥ (Κ. Ν.). *Περὶ τῆς ἐν Σύρῳ πνευμονικῆς πανώλους.* [On the Outbreak of Pneumonic Plague in Syros.]—„Ἀρχεῖα Ἰατρικῆς". (*Arch. de Méd.*) 1916. Feb. 1–20. Vol. 11. No. 4–6. pp. 49–55. With 3 text-figs.

A report on a small outbreak of what was suspected to be plague pneumonia in the town of Syros. The first case occurred in a man employed in a granary in which corn from the Piraeus was stored, at which place there were at that date (August, 1914) suspicions of plague. Corpses of rats had been seen near the door of the building, before which ran one of the sewers of the town. The man died. His case was followed by nine others, all of which proved fatal. Bacilli of plague-like aspect were isolated from the sputa, and from the lungs of two of the cases, along with numerous ordinary pneumococci, but cultures could only be obtained with the latter. By the isolation of all contacts and the usual measures of disinfection the epidemic was terminated. No infection with plague could be demonstrated in a number of captured rats.

J. B. N.

Williams (C. L.). **Diagnosis of Plague in Rats. The Advisability of making Routine Microscopic Examinations of Rats, Supplementary to the Macroscopic Examination.**—*U.S. Public Health Rep.* 1916. Aug. 18. Vol. 31. No. 33. pp. 2199–2205.

The diagnosis of rat plague by the macroscopic method is probably superior to the microscopic method if either is to be used singly, but it appears nevertheless true that complete reliance cannot be placed on an investigation of the gross pathological changes met with in plague infection. By the routine examination of smears from the liver and spleen, used as a cross-check to macroscopic examination, a materially important number of plague infected rats may be discovered that would otherwise pass undetected. During the period October 25th, 1915 to March 15th, 1916, routine examinations of spleen and liver smears were made from all rats examined in New Orleans, as a supplement to macroscopic examination; the microscopic work being performed by a worker unconnected with the routine macroscopic examination. 28,570 rats were examined, and of the 20 plague-infected rats found, 13 were diagnosed by the gross lesions and the

remaining 7, or 35 per cent. by the microscopic examination alone. These seven rats presented no abnormality discernable to the naked eye. The diagnoses were subsequently confirmed by animal inoculation tests.

"During the early part of an anti-plague campaign—that is, from its inception until the number of plague-infected rats distinctly decreases—the macrosocopic examination alone is probably sufficient.

"It is probable that during the height of an epizootic the vast majority of infected rats show well-marked signs, while toward the end of the epizootic, and particularly when eradicative measures have been employed, the relative and, indeed, the absolute number of infected rats showing slight signs or none, distinctly increases. This belief is based partly on the experiments of the English Plague Commission and partly on our observation in New Orleans, where the percentage of infected rats showing slight or indistinct signs markedly and progressively increased as the epizootic declined.

"It is apparent, therefore, that routine smear examination assumes its greatest importance when the epizootic is on the wane, for when infection is prevalent and widespread the missing of a few infected rats is not of the same importance as when at a later date foci have become few and isolated."

R. St. J. B.

Short (A. Rendle). **Three Cases of Bubonic Plague arising in England.** —*Brit. Med. Jl.* 1916. Sept. 2. p. 327.

Two certain cases, and one probable case of bubonic plague have been treated recently at the Bristol Royal Infirmary, between the 30th July and the 5th August, 1916. The first and the last cases were confirmed in diagnosis by bacteriological methods. Two of the patients and the father of the third worked in a rag factory, full of fleas and rats, in a poor part of the city. Plague bacilli were demonstrated in a rat found dead in the factory.

The opinion is expressed that infection may have arisen in one of three ways:—(*a*) infection from the rags, or (*b*) infection caused by rats escaping from infected ships entering the port, or (*c*) deliberate inoculation of city rats by an enemy. If this last theory be correct, it is probable that other towns may have a visitation of rat plague with human cases following.

R. St. J. B.

Rama Iyer (S.). **Tincture of Iodine and Plague.**—*Indian Med. Gaz* 1916. Oct. Vol. 51. No. 10. p. 371.

Intravenous administration of Tincture of Iodine has been already recommended by Connor in treatment of bubonic plague. Rama Iyer, working on similar lines, reports five recoveries in six cases treated by this method. His mode of treatment is as follows:—7 to 10 minims of Tinct. iod. are injected intravenously, twice on the first day, and one or two minims less on the second day. Thereafter five to seven minims are employed daily, until the temperature falls to normal and remains so. During convalescence, one and a half minims of the tincture with half an ounce of chloroform water is given four times a day for a week. During treatment the buboes should be painted with the tincture four or five times a day. Within 24 hours after the intravenous injection of iodine, the temperature either falls

to normal or falls two or three degrees without going up again. The patient gets a sense of comfort and his mind becomes clear. Even in those cases where the temperature does not fall to normal within 24 hours of the first injection, this fall may be obtained within three or four days. The earlier the case, the better the result. The drug acts as a good diuretic and no untoward symptoms are noticed. The bubo either becomes softened or completely subsides.

R. St. J. B.

Jackson (R. W. H.). **Administrative Control of Plague.**—*Jl. State Med.* 1916. Sept. Vol. 24. No. 9. pp. 277–284.

In this paper is given a brief account of the etiology of plague, clinical symptoms and methods of plague prophylaxis. With regard to the destruction of fleas in human habitations, the author is of opinion that this can be best effected by thoroughly washing the floors and walls with crude oil emulsion. The emulsion recommended is prepared according to the formula of Captain Burke, R.A.M.C., in the *Journal of the Royal Army Medical Corps*, as follows :—

"'The emulsion consists of crude oil 80 per cent. with 20 per cent. whale oil soap. It is a jelly mixing freely with water, and is commonly used in 3 per cent. solution. In 10 per cent. it destroys fleas in any form with perfect certainty. A room thoroughly washed with such an emulsion is freed from all insect life, and the emulsion can be applied with perfect safety, with no risk of fire, with great cheapness, and can afterwards be washed out of the floor with water. With one gallon of the solution a room 12 by 12 could be thoroughly treated in five minutes.'"

R. St. J. B.

Bonne (C.). **Pestbestrijding in New-Orleans.** [Plague-Combat in New-Orleans.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1916. Vol. 56. No. 3. pp. 320–336.

This is a short account of the methods employed by the United States Sanitary Service in combating the spread of plague. It includes a description of the well-known methods of rat-proofing, etc., employed, and gives extracts from the New Orleans City Ordinances anent the various sanitary measures enacted in relation thereto. It is mentioned that in districts where intensive trapping is employed, the number of mice caught, in proportion to rats, steadily increases, and that the numbers of *Mus alexandrinus* increase at the expense of *Mus norwegicus*, the normal balance between the weaker and the stronger species being artificially upset.

R. St. J. B.

Singer (Dorothea Waley). **Some Plague Tractates. (Fourteenth and Fifteenth Centuries).**—*Proc. R. Soc. Med.* 1916. June. Vol. 9. No. 8. (Sect. of Hist. of Med.). pp. 159–214. With 2 figs.

The two centuries which followed the Black Death in 1348 were prolific in literature on the subject of plague. The writings, for the most part, took the form of short tractates, a few folios in length, giving directions to the physician or the populace as to their conduct in the

time of plague, and advice for the treatment of the plague-infected. Most of the tractates contained also a certain amount of theoretical material on the nature and origin of the outbreaks.

In compiling the present communication, the author has taken her material from some 100 MS. tracts, supplemented by printed material, and especially by the valuable collection of tractates gathered by Professor SUDHOFF. Perhaps the most famous tractate of all is that ascribed to John of Burgundy or John à la Barbe, "a citizen of Liége and a professor of the art of medicine." This John of Burgundy has also been fairly established as the author of the "travels of Sir John Mandevill."

The tractate in question bears the date 1365 and covers a wide ground from astrology to phlebotomy. Under the section on prophylaxis one reads that a "simple temperate life is recommended. Luxury and, above all, baths are forbidden, lest the pores of the skin be opened and an entry thus afforded to the pestilential air."

Under diet, fruit is interdicted, except the acid variety. Honey is to be avoided, while aromatic wine, white wine and, above all, vinegar must be drunk. Disinfection should be carried out by means of fires of juniper branches, or better still, a powder, for which recipe is given, should be scattered on live coals as a deodorizer, and the resulting smoke inhaled through mouth and nostrils. A "pomum ambre," i.e., a mass of aromatic drugs made up with resin or amber, should be carried in the hand, while of herbal remedies, diptaine, scabious, tormentil, pimpernel, roses and violets are highly recommended. The pathological theory of plague held at this period was quaint and entertaining and is described by the author in the following words :—

"The evil vapours having entered the pores are conveyed by the blood to one of the three principal members—the heart, the liver, or the brain. Now it must be known that each of these principal members has an emunctory or place at which it seeks to expel its noxious superfluities. Thus, when the heart is attacked, we may be sure that the poison will fly to the emunctory of the heart, which is in the arm-pit. But if it find no outlet there, it is driven to seek the liver, which again sends it on to its own emunctory at the groin. If thwarted there, the poison will next seek the brain, whence it will be driven either under the ears or to the throat. If still no relief is brought by the blood-letter, the case has indeed become urgent, for the poison, having taken twelve hours to perform its circulation and sought an issue in vain, will now within the next twelve hours indubitably "fasten itself," throwing the patient into an ague and forming an apostume at or near one of the emunctories ; and then indeed the evil will be hard to eradicate."

R. St. J. B.

MISCELLANEOUS.

Scott (H. Harold). **On the 'Vomiting Sickness' of Jamaica.**—*Ann. Trop. Med. & Parasit.* 1916. Apr. 29. Vol. 10. No. 1. pp. 1–78. With 2 plates.

This is a complete account of the vomiting sickness of Jamaica both from the historical side and as containing the author's observations and experiments. It covers the reports summarised in this *Bulletin* [Vol. 6, p. 426 and Vol. 7, p. 381]. An interesting addition is the discovery that Mr. J. J. Bowry (a chemist) in 1886 investigated the nature of ackee poison. Quotations are made from his notes and a table of eight cases of poisoning is given, two-thirds of which were in children.

Several pages of tables are appended and coloured plates of the visceral lesions in animals fed on unsound ackees, in human cases of ackee poisoning, and in cases of vomiting sickness.

A. G. B.

Chalmers (A. J.) & O'Farrell (W. R.). **Preliminary Remarks upon Epidemic Cerebrospinal Meningitis as seen in the Anglo-Egyptian Sudan.**—*Jl. Trop. Med. & Hyg.* 1916. May 1 & 10. Vol. 19. Nos. 9 & 10. pp. 101–116 & 117–127. With 2 plates.

This paper is stated by the authors to contain "a few preliminary and tentative remarks," the outcome of three years' experience of the disease in the Anglo-Egyptian Sudan. But needless to say those parts of the subject which are dealt with are treated in the full and learned manner which one has come to expect in papers from the Wellcome Tropical Research Laboratories. Only a few points can be touched on here. The first record of cerebro-spinal meningitis in the tropics or sub-tropics appears to be the epidemic at Algiers in 1840–47. Other records are from Smyrna, Persia, Fiji, West Coast of Africa (Northern Nigeria, Northern Territory of Gold Coast, Northern Togoland), British East Africa, India, Ceylon, Jamaica, South America, and Mexico. The history of the causal organism is treated in some detail. The experience of the authors leads them to believe that apart from Weichselbaum's meningococcus, found by them in hundreds of cases, a residum of cases must be attributed to *Diplococcus crassus* von Lingelsheim 1906, which they have found in cerebrospinal fluid from a patient, as well as in the nasopharynx of two contacts with the disease. They give reasons for believing that Weichselbaum's organism is the "true causal agent."

Cerebro-spinal meningitis has been present in the Sudan "as long as living man can remember": the earliest definite record is in 1899 (Balfour). The cases greatly increased in numbers in 1913–14–15. They divide their consideration of the germs associated with the disease into (1) the Gram-negative coccus, (2) the Gram-negative-Gram-positive coccus, the first being found in more than 99 per cent. of the cases. The characters of the Gram-negative coccus are then considered in detail, with biological and cultural characters and biochemical reactions. They have no hesitation in saying that the strains of (1) isolated "belong to that group of which the type is the

organism named *Diplococcus intracellularis*, Weichselbaum, 1887." The serum reactions are gone into and the pathogenicity as regards both animals and man. They have found no evidence of a filterable virus. With regard to carriers they examined 847 British troops stationed at Khartoum; the organisms were found in the nasopharynx of 86, or 10·1 per cent. No actual cases had occurred among these troops. They have recovered the organism from the peripheral blood of early cases.

The classification by WINSLOW and ROGERS of the Streptococceae is given and it is concluded that Weichselbaum's organism should be attributed to the genus *Neisseria*, Trevisan, 1885; the meningococcus and gonococcus are thus separated from the diplococci. Diagnostic Tables of the family *Coccaceae* Zopf and of the genus *Neisseria* are given.

This brings them to the consideration of the Gram-negative-Gram-positive coccus. They satisfied themselves that they were not dealing with a double infection; both forms exist in one and the same chain. This is considered in the same way as is *Neisseria intracellularis*. It appears to the authors to be "a half-way house between a true Streptococcus and a true Neisseria." The name *Diplococcus crassus*, however, is left.

They then return to the meningococcus and discuss the pathology and the bacteriological diagnosis, with regard to which they quote a circular sent round by the heads of the military and civil medical departments. The only diagnostic difficulties met with have been the differentiation from the meningitic form of pernicious malaria and from tetanus. For the diagnosis of carriers MARSHALL'S modification of BUCHANAN'S medium has been used.

Bacteriological treatment comes next, vaccines and serum therapy being discussed. A polyvalent vaccine, prepared by the authors, has given good results, which were tested by the study of the opsonic index in both blood and cerebrospinal fluid. With vaccines are combined systematic removal of fluid by lumbar puncture, good food and nursing, and hygienic conditions. In the case of eight carriers vaccination appeared to give good results in clearing them of meningococci.

The authors' conclusions are as follows:—

"(1) The important causal agent is *Neisseria intracellularis* (Weichselbaum 1887), and only on one occasion have we found *Diplococcus crassus* von Lingelsheim 1906, acting in this capacity, and so far no other organism.

"(2) As far as our researches have gone only *man* has been found to be the host of *Neisseria intracellularis*, and he acts in this capacity as *the true carrier* of the germ, and as such does not acquire the disease because of an *immunity* conferred by auto-vaccination.

"(3) In order to acquire the disease two factors at least are required, viz:—

"(*a*) Infection with *Neisseria intracellularis*.

"(*b*) *Lack of* capability on the part of the body to produce the necessary *immunity*.

"The infection takes place from the nose of a carrier or a case to the nose of an uninfected person, and is favoured by overcrowding and bad ventilation. The lack of power to produce the necessary immunity is favoured by poor and insufficient food, bad hygienic conditions, and over-exertion.

"(4) In susceptible persons the germ passes into the mucous membrane of the nose and of its connected cells, and multiplies therein, and then entering the blood-stream forms in the early days of the disease a bacteriaemia. Normally, however, it does not long remain in the blood-stream and therefore normally does not produce a septicaemia, which when

present should be considered as a complication. Apparently the organism is strongly attracted to the cerebro-spinal fluid, into which it quickly passes *via* the choroid plexus of the lateral ventricle and perhaps other vascular structures of the brain and spinal cord and so causes the disease.

"The reason why the cocci as a rule do not pass in relays day after day from the mucous membrane of the nose into the blood is because the patient is either dead or the resistance is raised in a short time, but if this resistance again becomes lowered it is possible that relays may again pass from the nose and in this way a relapse or recurrent attack ensues.

"(5) The rare various strains of *Neisseria intracellularis* and to be successful in treatment a *polyvalent serum and a polyvalent vaccine made from local strains* are necessary.* Vaccine alone will cure many cases, but requires time to act, which may not be available, and hence the value of the serum in such cases, especially when followed by subsequent vaccine therapy.

"(6) Prophylaxis depends upon :—

"(*a*) The search for, isolation of, and treatment of cases and carriers, and here vaccine therapy is of use in helping to cleanse cases and carriers.

"(*b*) The increase of the immunity of the general population which can probably be done by prophylactic vaccination in doses of 5, 50, and 100 millions, but further experience is required of this when given on a large scale. There is little doubt that a negative phase is produced, at all events at times, in the first stages of this vaccination, and this may possibly be aggravated by fear, poor or insufficient food and bad hygiene. It also appears to us that vaccine prophylaxis ought to be tried on a large scale, as it causes no general or local symptoms if the germs are killed at 50° C., and the vaccine is aseptic and isotonic with the fluids of the body, and if the site of injection is the subcutaneous tissue just below the angle of the scapula, which in our opinion is the best place for prophylactic and other subcutaneous injections.

"(7) There are a great many questions with regard to epidemic cerebrospinal meningitis which are at present unsolved, and one of the most important appears to be the question as to whether any animal or animals act as hosts of the germ."

A. G. B.

ARLO (J.). **La méningite cérébro-spinale à Kindia, Guinée française (Janvier-Avril 1916).**—*Bull. Soc. Path. Exot.* 1916. Oct. Vol. 9. No. 8. pp. 351–356. With 3 charts.

The first case was diagnosed in January, in a boy of 14; lumbar puncture was done and diplococci not staining with Gram were found sparsely in the polynuclears, of which the fluid contained large numbers. Lumbar puncture was then done on all the sick tirailleurs in the hospital, suffering, according to their tickets, from extreme lassitude (*courbature*) with fever, bronchitis, broncho-pneumonia, and malaria, with the same result in many. Eighteen cases were treated by the author with 14 deaths. In April the epidemic was over. The symptoms differed with almost each patient. Most presented themselves for general weakness with headache and fever, usually slight. Many had transitory signs of pulmonary congestion or bronchitis. An autopsy was made in each case of death. Details of four of the less typical cases are given, with temperature charts. Treatment was symptomatic. Lumbar puncture appeared useful. The diplococcus was cultivated once and a guinea-pig was infected. No European was attacked. The origin was not determined. The disease is likely to spread because some infected natives deserted and went to their own villages to die. The population of Kindia is about 4,000.

A. G. B.

* So this sentence runs in the original.

Chalmers (Albert J.) & Marshall (Alexander). **Equine and Bovine Streptococci as Causal Agents in Human Infections.**—*Jl. Trop. Med. & Hyg.* 1916. Sept. 15 & Oct. 2. Vol. 19. Nos. 18 & 19. pp. 213–215 & 225–228.

This forms the " fifth of a series of short notes upon the streptococcal infections of the Anglo-Egyptian Sudan " [see this *Bulletin*, Vol. 7, p. 392–5]. An endeavour is made " to trace to their sources the pathogenic cocci found in puerperal fever and in sore throats." Tables show the leading cultural features of the streptococci in each group of affections (7 cases puerperal fever, 6 sore throat) and the authors conclude from the data therein set down that the cases of puerperal fever were due to *S. salivarius* Andrewes and Horder, *S. bovinus* Broadhurst (syn. *S. bovis* Chambers and Atiyah), and *S. versatilis* Broadhurst, whereas the sore throat streptococci were *S. bovinus*, *S. versatilis* and *S. actuosus* Chalmers and Marshall ; in all, four species. A definition of the last-named, new, species is furnished. The provisional diagnostic table (*loc. cit.*) is now reproduced, with two alterations—the Mastitidis group becoming the Gasogenous group and the S. H. and S. group becoming the Non-fermenting group. Comparison of this table with those just referred to shows that *S. salivarius*, *S. bovinus* and *S. actuosus* belong to the Salivarius group and *S. versatilis* to the Faecalis group. The Salivarius group is now defined ; it is divided into a typical and an atypical sub-group, but strains of the three species named above are found in each sub-group.

To find the natural habitats of these species the authors examined the faecal matter of man, horse, and ox ; " zibla," a derivation of the faeces of the last two ; and human saliva. The result of each investigation is summed up in a table. Here it can only be said that in equine faeces were found *S. versatilis* (8 out of 10 strains), and *S. faecalis* ; in bovine faeces *S. versatilis* (7 out of 11 strains), *S. bovinus*, *S. mitior* and *S. faecalis* ; in " zibla " (a mixture applied to the roofs and walls of houses throughout the Sudan) *S. mitior*, and *S. bovinus* ; in human faeces *S. versatilis* (4 out of 10) *S. faecalis* and *S. bovinus* and in human saliva *S. bovinus*, *S. versatilis*, *S. faecalis* and *S. salivarius* (one strain). The findings in dry zibla show how resistant streptococci may be to heat and dryness. *S. mitior* and *S. faecalis* have both been met with as pathogenic agents in man. *S. actuosus* was not found in any of the substances examined, it is a haemolytic species and, according to Broadhurst, such strains appear to be most common in the canine alimentary canal. It is pointed out that the results obtained agree in general with those of the American workers. A. G. B.

Samuels (William F.). **General Paralysis of the Insane in Federated Malay States.**—*Jl. Mental Sci.* 1916. Apr. Vol. 62. No. 257. pp. 411–415.

The author is Medical Superintendent of the Central Lunatic Asylum, Tanjong, Rambutan. Three cases of general paralysis in Chinese are described, in one of which an autopsy was obtained. In one case there was " exaltation, grandiose delusions, extreme facility, tripping now and then over a word ; later, actual slurring of speech, tremulous lips and tongue, unequal pupils with loss of light reaction " and lastly a paralytic seizure. The demented type is by far the most common.

In 1912–14 out of 977 admitted there were 33 cases of general paralysis, giving a percentage of 3·38. The percentage among males was 3·7, among females 2·26. Thus general paralysis of the insane in the F.M.S. "cannot even be described as a rare occurrence." [In this connection see Dr. MOTT'S review of van BRERO'S monograph on Nervous and Mental Diseases in the Tropics, this *Bulletin*, Vol. 4, p. 115.]

A. G. B.

PANAYOTATOU (Ang.). *Coccobacillus buccalis.—C. R. Soc. Biol.* 1916. Apr. 15. Vol. 79. No. 8. pp. 291–292.

From two cases of ulcerous stomatitis the author has isolated a microbe that appears to be the cause of this disease, which is very frequent in Egypt in children up to the age of 10. The microbe has the form of a coccobacillus and probably belongs to the genus Pasteurella. It stains well with aniline dyes and is decolourised by Gram. It grows well on the usual media. A description is given of its growth in bouillon and on agar. It is aerobic. An account is given of the symptoms produced in rabbits, into the veins of which it is introduced. Subcutaneous inoculation gives a localised lesion. From ulcerations thus produced the author has recovered the coccobacillus in pure culture. [Evidence is not given that the organism is the cause of ulcerative stomatitis.]

A. G. B.

STEVENSON (A. C.). **Morphia Injector's Septicaemia (Whitmore's Disease).**—*Trans. Soc. Trop. Med. & Hyg.* 1916. June. Vol. 9. No. 7. pp. 218–219.

The author showed specimens, illustrating the pathology of WHITMORE'S disease, presented to the Wellcome Bureau of Scientific Research. For symptoms and post mortem appearances see this *Bulletin*, Vol. 7, p. 334. On the bacteriology the author writes:—

"Amongst, and in the leucocytes in the alveoli, small beaded bacilli are seen. They do not retain Gram's stain, nor are they acid fast. Their length and the number of beads in them vary considerably. When cultivated on ordinary media they appear as short rods, with generally two dark staining dots in them; on salt agar they grow into long filaments. They are motile in the early stages of cultures, but this soon disappears.

"Inoculation into guinea-pigs invariably leads to a fatal result with the formation of nodules. If only a small dose is used, ½ to 1 minim of an 18 hours' broth culture, intraperitoneally, enlargement and inflammation of the testicle is got, as in Strauss' sign in glanders, in about 36 hours. With large doses death ensues too quickly. Guinea-pigs are also capable of infection by feeding with cultures."

A. G. B.

PASTEUR INSTITUTE OF SOUTHERN INDIA, COONOOR. **The Annual Report of the Director together with the Ninth Annual Report of the Central Committee of the Association.**—29 pp. 1916. Madras: Supt Govt. Press.

The number of patients treated for hydrophobia during the year was 1,490, an increase of 280 over the preceding year; 63 were Europeans. Thirteen died of hydrophobia, three during the treatment, three within

15 days of its conclusion, and seven later. These last are classed as failures giving a rate of 0·47 per cent. The virus was at its 524th passage at the end of the period under review. From the results of a study of the literacy of the patients it is concluded that only about two per cent. of the persons in the Madras Presidency who were bitten by dogs suspected to be rabid come to Coonoor for treatment. The report states that the grant of free railway passes and maintenance during the period of treatment to persons who are certified by their local authorities to be indigent, and if necessary to an attendant also, has opened up a new means of livelihood. One man has come on not less than six different occasions, in attendance generally on "relatives." A series of tables gives many sorts of details. In 1,438 cases the biting animal was a dog, in 37 a jackal, and in the remaining 15 cases a man, cow, cat, ass, horse or monkey. In only 294 cases was there evidence, either laboratory or medical, of rabies in the biting animal, but in 785 instances the animal was "probably rabid." Figures of treated and untreated persons in 1913–14, 14–15 and 15–16 show that "the treatment more than halves the chances of death from hydrophobia." These are instances in which the biting animal bit more than one person. The proof that an animal had rabies does not necessarily show that its bite was infective. "The risk of death run by persons bitten by some mad dogs is about 40 per cent., by other mad dogs practically zero; no man can yet decide whether the mad dog was infective at the time of biting or not."

The Director's Report is followed by that of the Central Committee of the Association.

A. G. B.

i. Sergent (Etienne). **A propos de la distribution géographique du goître en Algérie.**—*Bull. Soc. Path. Exot.* 1916. June. Vol. 9. No. 6. p. 314.

ii. de Bergevin (Ernest) & Sergent (Etienne). **A propos de l'hypothèse de la transmission du goître endémique par un insecte piqueur.**—*Ibid.* p. 345.

iii. Jeanselme (E.). **Répartition des eaux minèrales et de l'endémie goîtreuse au Yunnan.**—*Ibid.* July. No. 7. p. 414.

i. In 1909 Dr. Et. Sergent published a paper on the geographical distribution of goitre in Algeria, illustrated by a chart which showed the disease to be prevalent in the valleys of the northern slope of the Atlas, south of Algiers, and on similar slopes in the Kabylie mountains, and near Bougie*, but not on the plateau nor southern slopes of the Atlas. Repin reproduced this chart and indicated on it the mineral springs of the country†. These also are found in the great majority on the northern slopes of the Atlas. From the distribution of the mineral springs Repin thought that goitre should occur between Oran and the Moroccan frontier. This now turns out to be the case, goitre having been recently reported from this region.

ii. In the second paper the authors refer to the finding by Bouilliez of a Reduviid bug, *Acanthaspis sulcipes* Fabr. in a part of Central Africa where goitre was endemic [see this *Bulletin*, Vol. 7, p. 314].

* *Bulletin de la Société de Pathologie Exotique*, 1912, Vol. 5, p. 122.
† *Loc. cit.*, p. 299.

This insect is not known in the goitrous districts of Algeria. There is a nearly allied genus but it has not been reported as biting man. Other bugs mentioned either do not bite man or do not occur in the mountains.

iii. This author in 1905 published a list of mineral springs found in Yunnan. In 1910 he studied the distribution of goitre and cretinism in that country and found that this distribution was almost identical with that of the mineral springs.

A. G. B.

NICHOLSON (M. A.). **The Effect of Typhoid Inoculation on Endemic Goitre at the Lawrence Military Asylum, Sanawar, Punjab [1900 to 1912].**—*Lancet.* 1916. Aug. 12. pp. 275–277.

The theory of causation of endemic goitre by infective organisms probably of intestinal origin and water-borne was suggested by Major MCCARRISON [*Lancet*, Feb. 8, 1913] and that theory prompted the work which Captain Nicholson, I.M.S., records in the paper under notice. Careful enquiry into registers, kept in the Sanawar Asylum for the children of British soldiers serving in India, leads to the final conclusion :—

" Typhoid inoculation at Sanawar had no effect in any way on the course of the endemic goitre there, either individually or collectively."

J. H. Tull Walsh.

MCNEIL (H. L.). **Syphilis in the Southern Negro.**—*Jl. Amer. Med. Assoc.* 1916. Sept. 30. Vol. 67. No. 14. pp. 1001–1004.

The author examined a series of 1,200 adult negroes admitted to hospital at Galveston by the Wassermann and luetin tests. Doubtful reactions were considered negative. In only half could the luetin test be successfully followed. He notes that " a positive luetin can be produced at will on non-syphilitic individuals, by the previous administration of the iodids in sufficient quantities."

Of the 1,200 negroes 34 per cent. gave positive Wassermanns (Noguchi's modification) and 18 per cent. positive luetins, the total percentage giving positive reactions to one or both tests being 42. To determine the actual prevalence of syphilitic infection in the healthy working negro he examined 200 admitted to the surgical wards, ruling out any that were diseased ; 24 per cent. gave positive Wassermanns and 28 per cent. were positive to one or other test. A limited study of children (52) gave 9·5 per cent. positive Wassermanns, showing that the majority of the cases of syphilis are acquired.

The author proceeds to group the 400 medical cases, with 45 per cent. laboratory evidence of syphilis, into three divisions. Among those diseases which appear to be unconnected with syphilis, the positive Wassermanns being about 30 per cent., are pulmonary tuberculosis, typhoid fever, malaria, pneumonia, dysentery, pellagra, cancer, chronic interstitial nephritis and arteriosclerosis. Diseases " perhaps indirectly associated with previous syphilitic infection " are, an acute or subacute diffuse nephritis with dropsy, a common cause of death among negroes, spastic paralysis or paresis, and myocarditis. The diseases constantly associated with syphilis are, aneurism of the

thoracic aorta, aortic insufficiency, and bone pain, usually called rheumatism or lumbago. On the surgical side there stand out rectal troubles and chronic leg ulcers. These points are illustrated in the table.

Occurrence of Syphilis in the Commoner Diseases, as Determined by Positive Wassermann Reactions on the Negro.

Disease.	No. Cases.	Per Cent. Positive Wassermann.
Apparently healthy adult negroes ..	200	24
Negro children	52	9·5
Pulmonary tuberculosis	60	23
Typhoid	13	22
Malaria	7	12
Dysentery (amebic and bacterial) ..	12	20
Pneumonia	30	30
Pellagra	22	13
Cancer	17	12
Arteriosclerosis (or senility)	18	23
Chronic interstitial nephritis	4	25
Diffuse nephritis (often subacute or acute)	60	48
Paralysis	34	50
Myocarditis (uncomplicated by organic valvular lesions or by nephritis) ..	21	40
Cirrhosis of liver	6	66
Aneurysm of thoracic aorta	12	83
Aortic insufficiency	20	75
Syphilitic bone or joint pains	30	80
Rectal abscess	4	75
Rectal stricture	10	90
Rectal fistula	13	61
Hemorrhoids	9	22
Chronic leg ulcer	18	55

The author writes :—

"The occurrence of syphilis among white people of the same social class as the negroes would seem to be about the same as that among the negroes. In the better classes of white people, however, the occurrence is much less, while in the best classes (young and healthy medical students), it is almost *nil*.

"Syphilis is undoubtedly one of the chief causes of death and disease among the negro, ranking as high or higher than tuberculosis, Bright's disease and pellagra, which are the three other chief causes of death and disability among that race in this community."

A. G. B.

JAMISON (S. Chaille). **Certain Phases of Syphilis in the Negro Female from the Standpoint of Medical Diagnosis.**—*New Orleans Med. & Surg. Jl.* 1916. Aug. Vol. 69. No. 2. pp. 96–97.

The observations made in this short paper are based on the cases of syphilis diagnosed in the examination of 1,000 consecutive medical cases seen at New Orleans. Of these 166 were diagnosed as syphilis, or 16·6 per cent. It heads the list, tuberculosis coming next, and malaria

a bad third. The author expresses surprise at the rarity of skin lesions. It is his impression that the blacks are rather exempt from these. On the other hand mucous patches are common and the Treponema can usually be easily demonstrated in them. "The incidence of syphilitic arthritis in "chronic rheumatism" is very high among the negro females"; pain, worse at night, is the commonest symptom. The Wassermann reaction was done on half the cases and was positive in about 80 per cent. There were two cases of tabes, and one of paresis.

A. G. B.

Sicard (J. A.) & Lévy-Valensi (J.). **Syphilis latente des Arabes. Réactions du sang et du liquide rachidien.**—*Bull. et Mém. Soc. Méd. des Hôpit. de Paris.* 1916. July 13. 3 ser. Vol. 32. No. 23–24. pp. 1087–1088.

It is generally known that syphilis, though common, is a benign disease among Arabs, and that nervous manifestations are rare. The authors examined 30 wounded Arabs, Algerians and Moroccans, aged from 20 to 35. The Bordet-Wassermann reaction (it is pointed out in a footnote that these names should replace that generally used) in the blood showed 6 cases clearly and 2 slightly positive; that of the cerebro-spinal fluid (28 cases) showed 3 positive and 2 slightly positive. In the cerebro-spinal fluid (24 cases) there was hyperalbuminosis in 7 cases.

The conclusion is that humoral syphilitic manifestations were present in almost a third. Clinical symptoms, though searched for, were not found in any case.

A. G. B.

Longman (Heber A.). **Notes on Classification of Common Rodents. With List of Australian Species.**—*Commonwealth of Australia Quarantine Service.* Publication No. 8. 1916. 28 pp. With 7 figs. Issued under the Authority of the Minister for Trade and Customs.

Dr. Cumpston, Director of Quarantine, Commonwealth of Australia, tells us in a preface that it was considered desirable to have a short description of the principal species of rodents met with on vessels coming to Australia and that the services of Mr. Longman of the Queensland Museum were obtained for the purpose. Hence the present publication. In the introduction the part played by the rat in plague, as a host for *Trichinella spiralis*, and as an agent of destruction, is described, while on the credit side there is only the fact that it is in some degree a scavenger. The true rats and "marsupial rats" are then compared; though superficially alike they are readily distinguished by the dentition, as is shown in a figure. An outline is then given of the groups of Muridae occurring in Australasia. Extended descriptions follow of the Australian species and such exotic species as might be introduced. The rodents illustrated are *Hydromys chrysogaster* Geof., the Australian water rat (skull figured); *Epimys rattus* Linn., the black rat; *Epimys norvegicus* Erxl., the brown rat; *Pseudomys novae-hollandiae* Waterhouse, the field mouse; *Notomys longicaudatus* Gould, a jerboa rat; *Uromys macropus* Gray, the

Queensland giant rat. A diagrammatic representation from three aspects of the skull of the brown and black rat respectively shows how these may be distinguished by the relation of the width of the brain case to the length of the parietal. There is a section on the preservation of specimens and a list of Australian rats. Appendices deal with rat poisons and the inspection of vessels for rat infestation (by Dr. Elkington), and with rat bite fever. Clearly this publication will be useful to others than Australians. A. G. B.

Balfour (Andrew). **The Medical Entomology of Salonica.**—An Address delivered to the Salonica Medical Society, May 17, 1916. 25 pp. With 31 figs. Wellcome Bureau of Scientific Research. London, W.

In this interesting and lively address given before the Salonika Medical Society in May 1916 the author talks of the house fly, two species of Fannia, the blue-bottle and green-bottle flies, *Stomoxys calcitrans*, Sarcophaga, Hippobosca, mosquitoes and Notonecta, *Phlebotomus papatasii*, Simulium, lice, bugs, fleas and the itch-mite. All these and others are illustrated in the various stages of their life histories. The address hardly lends itself to summary but some points of interest may be indicated. After an account of the well-known misdoings of the house fly the author proceeds :—

"I want to-day specially to direct your attention to what happens in the case of amoebic dysentery as recently worked out by Lieut.-Colonel Wenyon and Captain O'Connor, R.A.M.C., at the Orwa-el-Waska Hospital in Alexandria, not only for *Musca domestica*, but for *Fannia canicularis*, the little house or latrine fly, and for both Green-bottles and Blue-bottles. . . . Within 20 or 30 minutes of feeding on human faeces, and in some cases even five minutes after such a feed, flies begin to deposit droplets of liquid faeces, and in these the unaltered and living cysts [of *E. histolytica*] can be seen if the faeces on which the fly has been feeding contained them in the first instance. Within a few hours thousands of cysts may pass through a single fly, and if the fly finds its way to food, as it so commonly does, they are deposited on the latter, and the way made easy for a dysenteric attack."

The three Greek species of Anopheles appear to be *maculipennis*, *superpictus* and *bifurcatus*. It appears that in May 1916 fifteen hundred acres of swamp near Salonica had been drained; Balfour writes, "I have not seen such extensive drainage operations since I witnessed the colossal work of the Americans in the Panama Canal Zone." Speaking of the breeding places of Phlebotomus he adds to those generally listed, the earthen parapets of trenches. About bugs he says, "They have never yet been absolutely definitely convicted of carrying any human disease." [This is the truth although the bug is often inculpated by medical as well as lay men. There is perhaps a general tendency to apply to nature the results of a laboratory experiment.] Col. Balfour, like the Master of Christ's, so leavens his instruction with humour that digestion is a pleasant and easy process.
A. G. B.

Macfie (J. W. Scott) & Ingram (A.). **The Domestic Mosquitos of Accra.** — *Bull. Entom. Res.* 1916. Oct. Vol. 7. Pt. 2. pp. 161–177. With 2 maps.

A careful examination has been made of all the mosquito larvae collected at Accra by the Sanitary Inspectors during a complete year,

December 1914 to November 1915. Accra is described as a dry and dusty town, the rainfall in these 12 months being 21·75 inches. In the 417 samples of water submitted ten different species were found, seven of which came from native compounds. In 1910–11 GRAHAM made a similar study of the larvae found in native water receptacles at Lagos, examining 1,043 samples; he found six species of mosquito. These findings are compared and contrasted in Table II. Only four species are common to the two lists.

TABLE II.

The percentages in which the larvae of the various mosquitos occurred in the native compounds at Accra (411 samples) and at Lagos (1,043 samples).

Species of Mosquito.	Accra.	Lagos.
Anopheles costalis	1·0%	1·8%
Culex decens	0·7	1·8
Culex duttoni	..	8·3
Culex fatigans	14·8	..
Culex invidiosus	0·2	..
Culex tigripes var. *fusca.*	0·2	5·3
Culiciomyia nebulosa	..	21·6
Stegomyia fasciata	90·0	92·5
Stegomyia metallica	0·2	..

To show the seasonal distribution, the monthly proportions in which larvae of the three types—Anopheline, Stegomyia, and other Culicine—have been found in samples sent to the laboratory from all sources during 1912–15 are indicated in another table, and another shows the distribution of samples containing Stegomyia during 1915. The conclusion is that there is no seasonal variation, and it is noted that domestic mosquitoes are probably independent of rainfall. The authors go on to consider the distribution of the larvae in the various blocks into which, for sanitary purposes, Accra is divided. Table V shows the specimens of larvae Stegomyia, other Culicines, and Anophelines—collected in 1912–15 distributed according to blocks and the same is indicated graphically on a map. It is seen that mosquitoes breed most freely in the middle of Accra, the most densely populated part. Stegomyia, "which practically means *S. fasciata*," occurs in large numbers in every block; Culicine larvae, "practically *Culex fatigans*," in smaller numbers in every block; and *Anopheles costalis* in very small numbers in most blocks. The authors ask how it is that *A. costalis* is found breeding in water receptacles in compounds; they think it probable that breeding is voluntary in these situations, *i.e.*, not caused by want of pools.

Forty-one species of mosquito have been collected at Accra; these are named. During eight of the 12 months one of the authors living in the European quarter collected all the mosquitoes he could. The result is shown in Table VI.

TABLE VI.

The mosquitoes, arranged in order according to the frequency of occurrence, found at Accra (*a*) as adults in bungalow A, 1st December 1914 to July 1915, and (*b*) as larvae in the samples sent to the laboratory by the Medical Officer of Health during the same period.

Adults.			Larvae.		
Species.	No. caught in bungalow.	Percentages.	Species.	Number of samples in which they were found.	Percentages.
Mansonioides africanus ..	129	46·0	*Stegomyia fasciata* ..	342	82·0
M. uniformis	81	28·9	*Culex fatigans*	59	14·1
Culex thalassius	31	11·7	*Anopheles costalis* ..	3	0·7
Anopheles pharoensis ..	11	3·9	*Culex decens*	3	0·7
A. costalis	10	3·5	*Culiciomyia nebulosa* ..	3	0·7
Culex fatigans	6	2·1	*Stegomyia leuteocephala*.	2	0·5
Anopheles funestus ..	3	1·0	*Stegomyia metallica* ..	2	0·5
Culex duttoni	2	0·7	*Culex invidiosus* ..	1	0·2
Ochlerotatus irritans ..	2	0·7	*Culex tigripes* var. *fusca*	1	0·2
Culex decens	1	0·3	*Stegomyia unilineata* ..	1	0·2
Culex insignis	1	0·3			
Culex invidiosus.. ..	1	0·3			
Micraedes inconspicuosus	1	0·3			
Stegomyia fasciata ..	1	0·3			

"Only five species are common to the two lists, namely, *Anopheles costalis*, *Culex decens*, *C. fatigans*, *C. invidiosus*, and *Stegomyia fasciata*, and whereas *Mansonioides africanus* and *M. uniformis*, by far the commonest mosquitos in the bungalow, do not figure at all among the larvae, *Stegomyia fasciata* which heads the list of larvae is last on the list of mosquitos."

The causes of these differences are discussed and it is noted that 156 mosquitoes were collected in a native's house in a block abounding in *S. fasciata* larvae and yet not a single specimen of this species was amongst them. One probable explanation is that *S. fasciata* "does not roost indoors."

"A consideration of the two lists shown in Table VI convinces us that an examination of the larvae found in the compounds not only fails to give any adequate idea of the mosquito fauna of a town, but also fails to indicate the species of mosquitos to the attacks of which the inmates of the houses are liable. It also furnishes proof of the necessity for extending anti-mosquito measures so as to reach the species that breed far afield."

The paper closes with a note on the distribution of some of the commoner mosquitoes found on the West Coast of Africa and their numerical distribution is roughly given in Table VII at Accra, Lagos, Ashanti and the Northern Territories. The result is to show that some mosquitoes are commoner at the coast and others inland, the variations depending perhaps on the food supply of the larva.

A. G. B.

LEGENDRE (Jean) & PERRIER (Edmond). **Destruction des moustiques par les poissons.**—*C. R. Acad. Sci.* 1916. Oct. 9. Vol. 163. No. 15. pp. 377–378.

The fish which adapt themselves best to the conditions of life in rice fields are those which like calm and warm water, especially the Cyprinidae. The author has started a piscicultural station near Tananarives in Madagascar where the area of rice cultivation is 300,000 hectares. Here he has introduced two kinds of Cyprinidae, "*Carpe miroir*" imported from France, and "*Carpe Maillart*" from Réunion. He has found that the gold fish, *Carassius auratus*, devours mosquito larvae readily in the rice fields and increases with great rapidity, e.g., 1,300 fish were introduced in January into an area of about a hectare, and five months later 18,000 were taken out. The Malagasies are very fond of fish and the author believes that *rizipisciculture*, as he calls it, has a fine future in Madagascar. [This is a favourite subject of the author's. See, for instance, this *Bulletin*, Vol. 2, p. 329, where more information is given; on the general question Vol. 2, p. 652–4 may be consulted.]

A. G. B.

WURTZ (R.). **Rapport sur la nécessité de donner aux autorités sanitaires, en France, le droit de rechercher et de détruire les larves de moustiques, au nom d'une Commission composée de MM. Laveran, Blanchard, Roux, Mosny, et R. Wurtz, Rapporteur.** —*Bull. Acad. Méd.* 1916. Sept. 12. 3 ser. Vol. 76. 80 Year. No. 36. pp. 189–195.

The fact that in the last two years several cases of malaria have been reported in France, as a result of the increased number of malaria carriers during the war, has led to the appointment by the Academy of Medicine of a Commission with instructions to report on the need for giving the French sanitary authorities the right to search for and destroy mosquito larvae. The immediate cause was this. The reporter, Dr. Wurtz, made an attempt to enquire into the cause of the prevalence of mosquitoes in Paris and sought permission from the Prefecture of Police to enter premises suspected of harbouring larvae; it was refused on the ground that there were no regulations on this subject. Malaria appears to have always existed in Paris, at any rate till quite recently; in 1886, 131 cases were reported by RIVES as seen in eight years, and several cases at the time of the Exposition in 1900. Anopheles have never been found, though *A. maculipennis* exists in the suburbs and in neighbouring Departments. It is suggested that transmission may have been effected in some cases by Culex by the soiled proboscis method. The author knows from personal experience that mosquitoes have increased in Paris in the last 25 years, and he attributes this to the establishment of the water carriage system, unused flushing reservoirs serving as breeding places though it does not appear that he has found larvae in them. He gives a brief account of the work done in French tropical colonies by anti-mosquito brigades and points out that the same programme is needed at Paris though on a much smaller scale; instead of being carried out daily it would only be set in action at the request of one or more inhabitants.

The Commission agreed that the powers given to sanitary authorities for the prevention of epidemics should be widened to include the detection and destruction of mosquitoes, and should include the right to visit premises and to give directions as to the measures needed.

A. G. B.

da Costa Lima (A.). **Contribuçao para o estudo da biolojia dos culicidas. Observaçoes sobre a respiraçao nas larvas.** [A Contribution to the Study of the Biology of Culicidae. Observations on the Respiration of the Larvae.]—*Mem. Inst. Oswaldo Cruz.* 1916. Vol. 8. No. 1. pp. 44–49. With 3 text figs.

In reply to a criticism by Sen, in the *Indian Journal of Medical Research*, the author explains the details of his methods for studying the mechanism of respiration in the larvae of gnats. The larvae were confined in various ways in receptacles below the surface of water in jars in such a manner that they could not rise to the surface. He concludes that the larvae of all species of gnats normally depend upon their anal syphons for respiration, but that, when young, they can absorb oxygen to a certain extent also from the air present in the water. Details are given of various experiments intended to elucidate this point, which is of course of practical importance in connection with the oiling of surfaces of water. It is mentioned that the larvae of Mansonia have two little hooks at the end of the syphon, which they insert into the submerged parts of certain aquatic plants, so as to be able to inspire the air contained in the air-canals which ramify in the tissues of such plants (*Pistia stratiotes*, e.g., as noted by N. W. B. Moore and confirmed by the author and Lutz).

J. B. N.

Bacot (A.). **The Use of Insecticides against Lice.**—*Brit. Med. Jl.* 1916. Sept. 30. pp. 447–450. With 2 figs.

The experiments detailed in this paper were arranged " on as nearly natural a basis for the insects as was consistent with their control and strictly comparative results." The substances used were cytisine (an alkaloid of similar physiological properties to nicotine), naphthalene, sulphur, " cresylic acid," iodoform, vermijelli and other combinations. In later trials cloth was impregnated with various substances in dilute solutions, " remedies of low cost and slow action."

" These latter trials suggest that a practical remedy may be found for preventing the spread of lice among troops by the use of a ' crude liquid carbolic acid ' and soft soap emulsion for the impregnation of shirts and underclothing. The emulsion should consist of 45 per cent. to 50 per cent. of soft soap, combined by heating with 50 per cent. to 55 per cent. of the crude carbolic. The strength of the solution used to impregnate the garments should be 5 per cent. of the emulsion in warm water, 3 per cent. being too weak for practical use ; while solutions above 5 per cent. might cause irritation to the skin. After dipping, the garments should be wrung and thoroughly dried before wearing. A normal sized flannel shirt after wringing will retain about 500 to 600 ccm. of the solution, and the cost would probably, apart from labour, be about one halfpenny per shirt.

" What is now required is a test on a practical scale to ascertain (*a*) what percentage of men are likely to have irritable skins which might be susceptible to the small percentage of cresols in the shirt, and (*b*) to ascertain the efficacy of the remedy to keep men free from lice in the field."

A. G. B.

WEIDMAN (Fred D.). *Pneumonyssus foxi*, Nov. sp. **An Arachnoid Parasitic in the Lung of a Monkey** (*Macacus rhesus*).—*Jl. of Parasit.* 1915. Sept. Vol. 2. No. 1. pp. 37–45. With 1 plate.

The parasites were obtained from the lungs of an adult *Macacus rhesus*, which died in the Philadelphia Zoological Gardens with subacute catarrhal colitis. There were 16–20 nodular lesions, 2–5 mm. in diameter, immediately under the pleura and slightly elevated. When fresh they were pink or grey. Two of these were gently scraped out, one yielding eleven females and one male, the other five females. Free larvae or ova were not found. Grossly, the arthropods were just visible. The female and the male are described in detail. The author states that in several respects the parasite does not agree with the genus *Pneumonyssus*, but he is unwilling to announce a new genus. This appears to be the fifth species of arachnid described from the air passages of a monkey, BANKS, NEWSTEAD, and LANDOIS and HOEPKE having described the others. The points wherein this parasite differs from the rest are stated, and the paper closes with a technical description of the new species, part of which is furnished by Dr. BANKS.

A. G. B.